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THE
ASIATIC SOCIETY OF BOMBAY
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Calcutta University Commission, 1917-19

REPORT

Volume V

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PART II

Recommendations of the Commission

CHAPTERS XL—LII

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY

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Civil Engineering.—(6) The college capable of turning out civil engineers of university rank. (7—12) Discussion of proposals of Public Works Department Reorganisation Committee in regard to maximum age of entrance, standard of admission and length of course. The Commission think that in view of the existing state of secondary education it is premature to lower the maximum age of admission to 19, and to reduce the college course from 4 to 3 years (13) The Commission concur in the proposal of the Committee that courses in architecture should be given to engineering students. (14) View of Public Works Department Reorganisation Committee on separation of higher and lower grades of engineering teaching. (15) Necessity for specialist teachers in civil engineering.

Mechanical Engineering.—(16) Scarcity of Indian trained mechanical engineers. (17) Present averseness of average high caste Bengali for manual labour. (18—19) The need for Indian trained mechanical engineers. Views of subcommittee of Sibpur College, of the staff of the college, of the Indian Industrial Commission. (20) Plan of Committee of Institution of Civil Engineers of 1905 for engineering education. Modification of plan for Indian conditions suggested by the Indian Industrial Commission. Sibpur to provide special advanced courses of university character for students previously trained for four years in workshops with simultaneous instruction in technical schools. (21—23) The Commission think complete university courses in mechanical engineering should also be provided at Sibpur, fed by a double stream; some students taking workshop training before entering Sibpur College, some after; but that students should have workshop training for at least three years. (24) Additions to the staff and equipment of the Sibpur College will be required for a higher course of mechanical engineering.

Electrical Engineering.—(25) Views of Indian Industrial Commission as to small scope at present for electrical engineers. The development of the electrical department of the Sibpur College should be referred to its future governing body.

Mining Engineering.—(26) The projected colliery school at Dhanbaid: a secondary school. (27) The recommendations of the Indian Industrial Commission in regard to mining education. (28) The need for higher mining education in Calcutta. (29) Suggested co-operation of Sibpur with the Dhanbaid school. (30) The proposed Central Metallurgical Institute at Sakchi. (31) Number of mining students at Sibpur. (32) Recommendations for the extension of the mining department at Sibpur.

Separation of higher and lower grades of engineering education.—(33—34) The Commission concur in the views of the Public Works Department Reorganisation Committee and the Indian Industrial Commission that the training for the higher and lower grades of engineering posts should be separated, and that the Sibpur College should, when practicable, be restricted to training for the higher grades. The Dacca School might perhaps undertake the training of all the students of the subordinate grades

Architectural education.—(35—37) Need for architectural teaching in Calcutta. Views of Public Works Department Reorganisation Committee, of Mr. H. A. Crouch, Consulting Architect to the Government of Bengal, of Mr. C. F. Payne, Chairman of the Calcutta Corporation. (38) Choice between School of Art and Sibpur as site for an architectural school. (39—40) Mr. Crouch's proposals for an architectural staff and course at Sibpur.

Residential arrangements.—(41) Need for more residential accommodation.

Facilities for Muslim students.—(42).

Section IV. Future government of Sibpur Engineering College and relations with the University of Calcutta.—(43—44) Sibpur at present a Government college. Powers of 'Governing Body.' Views of principal of the college as to the value of the governing body under the present system. (45—49) Proposal of members of the Sibpur staff that the connexion between the college and the University should be severed. The Commission do not concur in this proposal. (50) Proposal of staff to give to an enlarged 'Board of Visitors' control of engineering and diploma courses throughout Bengal, and power to confer degrees. (51) Dissent of some members of Sibpur staff from foregoing proposals. View of majority of the Commission's witnesses that universities should take part in higher technological training. (52) Proposals of the Indian Industrial Commission for government of engineering colleges, (53) in general accordance with views of the Commission. Need for concurrence of engineering firms in management of engineering colleges. (54—55) Views of Calcutta engineering firms on certain points connected with the future of engineering education in Calcutta. Views of the Commission as to the general constitution of a governing body for the Sibpur College. (56—58) Proposed *personnel* of governing body; its chairman; its secretary; the principal to be relieved of secretarial duties. (59—60) Powers and duties of governing body. (61—64) Appointment of staff. (65—66) Appointment of university professors and readers, and 'recognition' of teachers by University. (67) Question of Board of Visitors. (68) The Academic Board. (69—71) Relations of Sibpur College with the University of Calcutta. (72) Architecture as a university subject.

Section V. University degrees in engineering.—(73) Criticism of the new regulations for the engineering degree. (74) Discussion of question whether 'practical experience' should be made a pre-requisite for the degree and certified by the University, or whether certification of such experience should be left to a professional body.

Section VI. Some suggestions of the Indian Industrial Commission for the development of engineering education.—(75) Suggestions of Indian Industrial Commission considered with special reference to conditions in Calcutta. (76) The teaching of industrial chemistry and of chemical engineering. (77) Proposal to establish Imperial colleges of technology in engineering and in mineralogy and mineral technology. The Commission think the idea of combining engineering teaching both for imperial and for local needs in a single institution should be considered. (78) The Commission endorse the plea of the Indian Industrial Commission for

the establishment, with Government encouragement and aid, of an Indian Institution of Engineers.

Appendix I.—Views of certain engineering firms in Calcutta in regard to the future of the engineering industries in Calcutta and the management of Sibpur Engineering College.

Chapter XLVII.—Agricultural Education.

(1) Reference to chapter on agricultural education in Part I of report. The Commission are of opinion that agricultural education of a university character should be provided in Bengal, and in the first place by the University of Calcutta, but that caution is necessary in regard to the number of students to be trained at first. (2) Scheme for agricultural education of a university character proposed by the Commission after consultation with Mr. Milligan, Director of Agriculture for Bengal; certain divergences between the scheme of the Commission and (*a*) the scheme of Mr. Milligan, and (*b*) the scheme recently laid before the Government of India by the Senate of the University of Calcutta. (3) Three main features of the scheme of the Commission: (i) training in Calcutta in sciences as applied to agriculture, for three years, after passing the intermediate college examination in certain subjects, (ii) training during vacations of such three years at a university farm near Calcutta, (iii) one or two years' subsequent training in a Government agricultural institute. A degree in science to be awarded to students at the end of the first three years' course, a degree in agriculture after the completion of the work under (iii) above. (4) Details of scheme: (*a*) chemistry, (*b*) botany, (*c*) zoology, (*d*) bacteriology, (*e*) geology, (*f*) agriculture, including agricultural economics and book-keeping. Question of place or places where teaching should be given. (5). Proposed University Agricultural Farm. (6) Proposed Government Agricultural Institute. Mr. Milligan's scheme. (7) Creation of University Faculty of Agriculture. (8) Differences between scheme of present Senate and the scheme recommended. (9) Necessity for limiting numbers at first. Enumeration of callings open to agricultural graduates. The supply of well trained men likely to increase the demand later. (10) Reason for selecting Calcutta as the first centre for agricultural teaching. Room for more centres later (i) at Dacca, (ii) in Northern Bengal. (11) Question of primary agricultural education. Views of Bengal Agriculturalists' Conference; of Sir Daniel Hamilton. Teaching of agriculture in primary and secondary schools. Agricultural education in intermediate colleges. (12) Forestry. Sericulture. Veterinary Science. (13) Conclusion.

Chapter XLVIII.—Training in Technology (other than Engineering, Mining, Architecture and Agriculture) and in Commerce.

Section I. Technology as a branch of university studies.—(1—2) A modern university, especially one in a great industrial and commercial city like Calcutta, should include applied science and technology in its courses of study and award degrees and diplomas in those subjects. Such developments of university training are especially needed in India. (3) The decision of the University to enlarge its work in this direction approved and confirmed by the great majority of our witnesses. (4) The consequence of advanced technological training by the University will have a beneficial effect upon the outlook of the secondary schools. University developments of higher technological training

should be associated with corresponding changes in the course of study in high schools and with the provision of practical training in the proposed intermediate colleges. Hence the need for a Board of Secondary and Intermediate Education able to promote and encourage changes in the courses and equipment of the high schools and for intermediate colleges in preparation for what is projected in the more advanced stage at the University.

Section II. Technological departments proposed for Calcutta University. Comments on draft regulations.—(5) The action of the University of Calcutta in developing courses of technological training must largely depend upon financial support received from private benefactors, from the industries concerned and from the Government. (6—7) It is undesirable therefore at this stage to define exactly the higher technological developments (other than those of agriculture, mining, architecture and engineering) which the University should endeavour to establish. But *primâ facie* Calcutta is a suitable centre for the advanced training of students capable of meeting the requirements of (*i*) the leather industries, (*ii*) the chemical industries (including those concerned with the manufacture of dyes), (*iii*) the oil and fat industries, (*iv*) some branches of the textile industry. Enumeration of the branches of applied science in which *inter alia* the University should provide courses of instruction and facilities for research. (8) At Dacca, the University should not, in the first instance at any rate, attempt higher technological training, but the work of scientific investigation in its laboratories should be carefully brought into association with that of investigations in cognate subjects at Calcutta and elsewhere. (9) The function of a university in meeting the intellectual needs of the industrial and commercial world may be combined, with benefit to the whole of its intellectual life and civic outlook, with the maintenance of the older aims of university work. (10) In the technological departments an essential thing is to develope the technical sense of the students. (11) This involves the employment of a staff of teachers combining scientific knowledge with practical experience, the provision of costly equipment in the laboratories and workshops of the University, and friendly relations between the heads of the technological departments and the industrial firms, in order that the students may have opportunities for getting practical experience and may find access to employment. The building up of these conditions will be a slow process, and therefore the development of advanced technological training at the University should be undertaken with deliberation and caution. (12) The industrial outlook in India is full of promise for technological training. (13) Observations on the draft regulations of the Senate of Calcutta University (1918) for examinations and degrees in certain technological subjects. (14) Location recommended for the new technological departments of the University. Co-operation with the proposed Calcutta Technological Institute. (15) The question of a separate faculty.

Section III. Advisory committees; departmental workshops; advanced technological study abroad.—(16) The value of an advisory committee, including members with industrial experience and representatives of the scientific staff and administrative authorities of the University, attached to each technological department. (17) Honours and pass courses in technological subjects: degree and diploma courses. (18) Clear definition of the aim of each technological course desirable. (19) Need for securing opportunities for practical experience under works-conditions as part of a technological course. (20) Limitations of the practical

training which the University can give in workshops attached to its own technological departments. Provision of plant. (21) Technological scholarships held abroad: the difficulty experienced by some of the students in finding employment on their return to India in the industry for which they have been trained shows the need for caution in developing technological departments in Indian universities under the conditions hitherto prevailing, though these may change. (22) Analysis of the present occupations of Indian students trained in the technological departments of the Leeds University as showing that industry in India does not yet absorb all technologically trained recruits, but that technological training has educational value as a preparation for other responsible positions.

Section IV. Professors of technology and private consultant practice.—(23—24) Desirability of allowing professors of technological subjects to engage in private consultant practice so far as is consistent with their obligations to the University. (25) Relations of the Government of Bengal to technological education in its various grades. (26) The help and guidance which may be given by the Government of India in the wise development of advanced technological training and research at the various centres in India best adapted for the purpose, and in encouraging co-operation among scientific investigations in different institutions. (27) Our concurrence in the views of the Indian Industrial Commission on this matter.

Section V. Higher commercial education.—(28) Training for commercial life: the various grades required. (29) Higher commercial education given in institutions of university rank has firmly established itself in the United States and in some European countries. But the majority of leading British employers attach greater importance to the social training which a young man gets along with the ordinary course of education at a good school and university than to specialised theoretical preparation for a responsible post in commerce. There are signs of an increasing desire for changes in the course of secondary education and this may be followed by a demand for university courses designed to give training for a commercial career. But the prevailing view is that business ability is developed by business experience and that commercial life is the best college of commerce, provided that facilities are given for young men who are already in business to attend special courses on commercial subjects. (30) Criticism of the draft regulations for examinations and degrees in commerce adopted by the Senate of Calcutta University in 1918. The importance of establishing intermediate colleges, offering as one alternative a course preparatory to employment in commerce. (31) Improvement of the teaching and courses in secondary schools and in the intermediate courses more urgently needed in Bengal at the present time than the institution of degrees in commerce. (32) Recommendation that, in view of probable developments in future, the University should have power to establish a Faculty of Economics and Commerce and to grant degrees and diplomas in commercial subjects. The formation of an Advisory Committee on Higher Commercial Education proposed.

CHAPTER XLIX.—THE SPECIAL EDUCATIONAL NEEDS OF MUSALMANS.

(1) The significance, as a symptom of social change, of the increasing tendency of the Musalmans of Bengal to avail themselves of the opportunities afforded by modern education. (2) The educational condition of Musalmans a vital factor in the social and political development of Bengal. (3) Proposals for safeguarding

Muslim interests in the reorganised Calcutta University. (4) Proposals for safeguarding Muslim interests in connexion with the proposed Dacca University. (5) Muslim interests and the proposed Board of Secondary and Intermediate Education. Linguistic difficulties. The anonymity of examinees. (6) The spirit of the Commission's proposals.

CHAPTER L.—RELATIONS OF GOVERNMENT WITH THE UNIVERSITIES.

Section I. Introductory.—(1—2) Changes must be consequent upon the reconstruction of the university system. (3) The initial changes proposed to be made by the Government of India, (4) which thereafter should exercise visitatorial functions.

Section II. Powers of the Government of Bengal.—(5) The Governor of Bengal to be ex-officio Chancellor. (6—8) The Board of Secondary and Intermediate Education. (9) Government assent to Statutes. (10) Government representation upon university bodies in Calcutta, and (11) Dacca. (12—13) Financial relations between Government and the universities. (14—15) Changes in the management of Government schools and colleges. (16) Future of Government educational services. (17)—18) The functions of the Chancellor in Calcutta, and (19) in Dacca. (20) Appeals to the Chancellor.

Section III. The Educational Services.—(21) Application of the service system to university work should be reconsidered. (22—23) The functions now performed by the services to be separately treated. (24—28) Changes proposed in regard to university teaching posts, and (29—30) in regard to schools and intermediate colleges.

Section IV. Appointments to Government posts.—(31—32) Essential importance of the question in its bearing on university work. Importance of not dislocating the educational system. (33—36) Proposed Civil Service Commissions, to conduct tests not independent of the regular school and university course. (37—39) Competitive tests for the Indian Civil Service and their probable effects upon university work. (40—42) University reform a necessary preliminary.

Section V. The functions of the Government of India in relation to university work.—(43) The Government of India cannot dissociate itself from university work. (44) The function of *legislation*. (45) The function of *visitation*. (46—49) The function of *co-ordination*, illustrated especially from higher technological work. (50—53) The function of *stimulating and organising research*, illustrated from History. (54—55) The function of *assistance in recruitment*.

Section VI. Inter-Imperial university relations.—(56) Need for closer relations among the universities of the British Empire. (57) Migration of students within the Empire. (58) Beginning of co-operation among British universities, especially in regard to post-graduate research. (59) Conditions of effective co-operation. (60) The Universities Bureau of the British Empire. (61) Usefulness of such an organ in helping Indian students going to Britain for undergraduate courses, (62) technical training, or (63—64) training in the methods of investigation. (65) Possibility of interchange of university teachers between various parts of the Empire. (66) The Commonwealth of Nations may also be a commonwealth of learning.

CHAPTER LI.—FINANCIAL ASPECTS OF OUR PROPOSALS.

Section I.—General observations. (1—10)

Section II.—Secondary and intermediate education. (11—19)

Section III.—Dacca University. (20—32)

Section IV.—The Teaching University of Calcutta. (33—66)

Section V.—The mufassal colleges. (67—73)

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PART II

Recommendations of —the— Commission (*concluded*)

CHAPTER XL.

Examination Reform.

I.—Introductory.

1. In Chapter XVII we have analysed in detail the present examination system and the evidence bearing on it. We have shewn how greatly it affects the whole educational system of Bengal, from the secondary school upwards, and that without fundamental changes in the principles and methods of examination other changes would be largely futile; and we have made a number of suggestions for reform. Of all these suggestions there is one that appears to us of primary importance; for reform must depend on it. We mean the proposal that the purpose or purposes of each examination should be clearly defined.

2. A single example will illustrate one of the many applications of this principle. During the course of our work, the Government of India submitted for our consideration draft regulations for a diploma in spoken English, framed by the University of Calcutta. The draft regulations and the report which we submitted in regard to them will be found in the Volume of Appendices to this report. It will be seen that in our view the regulations were defective because the University did not ask itself with sufficient definiteness with what purpose they were being framed; and we suggested that they might have been framed with one of two purposes: either to test the power of the candidate to pronounce English words correctly and to read English with the right cadence and expression; or to test the power of teaching a class to do so; and that the regulations imposed an unnecessarily severe test for the first purpose, and an inadequate test for the second. For they require that the candidate shall have pursued a course of study in phonetics for a year and shall pass an examination in that subject, a requirement superfluous for the first purpose, and one which could not be satisfied by the vast majority of English public speakers or actors; but, on the other hand, they do not include any test of the power of teaching others to pronounce and speak

correctly; and the mere passing of an examination in phonetics, in addition to the *viva voce* examination, would clearly not demonstrate that [power. We suggested therefore that if the certificate is designed for the second purpose, it should involve training in teaching, and a practical test of the power to teach a class how to pronounce and read English, in addition to a test of the knowledge of phonetics, which would be a most useful adjunct.

II.—The Examinations Board.[1]

3. The designing of an examination to suit its purpose is a first step for the proper working of examination machinery, but only a first step. In order to ensure that the machinery is working properly, periodical inspection is necessary, and for this purpose we propose that a special Examinations Board should be set up with inspecting and advisory powers. Its duty would be to review the working of the examination system in all its aspects and to report periodically to the Academic and Executive Councils.

4. It should be a small body, including the Vice-Chancellor, but with a special chairman of its own. We refrain from making precise suggestions as to the *personnel* of the Board. It is clear that for the exercise of its difficult judicial functions it must be so constituted as to command the respect and confidence of the other university bodies. Most of its members ought certainly to be engaged or to have been recently engaged in the actual work of teaching and examining. Impartiality would be bought at too dear a price if it involved practical ignorance of the problems on which it was exercised.

5. The Board will need a small staff, who should form part of the general administrative staff of the University, and funds, though not very large funds, to carry out its enquiries. In order to deal with the complex and multifarious questions within its purview it will require the assistance from time to time of experts in the various subjects of university study and should have the power of appointing sub-committees including such experts. In order to deal with the problems of examinations on a large scale it will need the services of a skilled statistician, acquainted with the modern methods of

[1] The administrative proposals in this section relate to the University of Calcutta; but we have recommended that an Examinations Board on similar lines should be constituted in the University of Dacca (see Chapter XXXIII, para. 197).

statistics, who should be a member of the Board. The secretary of the Board should, if possible, have experience both of Indian and of other university examinations. We are disposed to think that, at any rate in the first instance, he should be a part-time officer, and that this post might be combined with a teaching post either in the subject of statistics or some other subject.

6. It would probably be advisable that in order to make the University as a whole acquainted with the actual standards enforced by the examiners the Board should from time to time publish specimen answer-papers of border-line candidates, so as to give an idea of the minimum attainments implied by a 'pass' 'distinction,' a 'first division' or, 'a second division,' as the case may be.[1] Such publication would be a safeguard against undue lowering of the standards and would be a guarantee of good faith which may be rightly demanded; and it would be useful as a justification of any criticisms of standards made by the Examinations Board and its expert committees. The University as a whole would be made more nearly acquainted with the real meaning at any given time of its own examination diplomas.

7. The Board should not be only critical; it should also suggest new departures and improvements in dealing with the various problems of the examination system—such matters as the problems involved in the setting of questions, of marking answers, of drafting instructions from head examiners to assistant examiners, of co-ordinating the marking of a set of assistant examiners, of estimating the unavoidable element of chance in the assignment of marks (a problem of statistics), of the checking of marks, of examination by compartments, of the timing of examinations in relation to the year's work with a view to reducing loss of time to a minimum, of practical, *viva voce* and 'library examinations,' of psychological tests, of the examination of course-work, of the duration and frequency of examinations, of printing and the maintenance of the secrecy of examination papers, of the invigilation of examinations, and the prompt distribution of scripts, of the reduction of the time spent in the correction of papers to reasonable limits, of examination-finance, including payments to examiners,

[1] The names of the candidates whose papers were selected for this purpose would of course not appear. In former days the Council of Education, Bengal, published specimen answer-papers of the best candidates.

candidates' fees, and the administrative expenses. The list we have given is not exhaustive. It is somewhat remarkable that no university has hitherto devoted itself to a systematic audit and survey of its own examination system in the same way that a large firm periodically audits its accounts. The Examinations Board of the Calcutta University would find plenty of pioneering work to do in this direction. It would probably do well to advise in many cases that new methods should be tested in the first instance by experiments and not applied rigidly and generally on a large scale until they have been so tested.

8. One branch of its work should be carried out, we suggest, conjointly with the Board of Students' Welfare,[1] namely the investigation of the problems of health involved. We have seen in Chapter XVII[2] that many of our correspondents attribute the gravest evils to the strain produced by the examination system. We believe with some of our correspondents that more regular work during term-time, with the assistance and guidance of tutors, ought to diminish the excessive strain of the period immediately preceding the examinations, apart from any changes in methods of examination. Nevertheless the examination itself must necessarily involve strain, and the question how far that strain is injurious and excessive is one for enquiry and investigation. The general problems of fatigue are now engaging the attention of experimental psychologists, doctors, and industrial experts. They certainly deserve attention from the university authorities.

9. We have expressly recommended that the Board should have inspectorial and advisory but not executive powers. Copies of all regulations for examiners such as those quoted in Chapter XVII, and of all reports of examiners, should be furnished regularly to the Board. It should be kept fully informed of all matters relating to examinations and should act in a sense as the conscience of the University in respect of examinations, and bring to the notice of the University defects which it regarded as of importance. But the general responsibility for dealing with those defects must rest with the Academic and Executive Councils; while the responsibility for the conduct of specific examinations must be left to the special bodies and boards instituted for that purpose and to the administrative officers of the University concerned.

[1] Chapter XXXVII, and Chapter XXXIX, paras. 38 and 39.

[2] Paras. 148-152.

10. The Board should keep itself informed generally as to the maintenance of university standards, but might be charged with the special function of reporting periodically on the comparison of standards between the examinations of the Teaching University, those of the mufassal colleges, and any special examinations of the temporarily affiliated colleges. But it is to be remembered that any comparison of examinations is an extremely complex matter and that it is only when differences are considerable that such comparison can yield satisfactory and trustworthy results. The rigorous equation of two sets of examinations is easy to prescribe on paper. An elementary knowledge of the mechanism of examinations shows that it is impossible to carry out in practice. It would however be the duty of the Examinations Board to draw attention promptly to any marked differences of standard between the examinations in question, it being always borne in mind that a difference of standard in the questions set may be insufficient to settle a point of this kind without an investigation of the requirements of the examiners for a pass, or honours, as the case may be. It is not our function to lay down precise rules for such a comparison. That must be left to the Examinations Board when it actually comes to grips with the problem.

11. We feel strongly that it is a matter for the new University bodies, and especially for the teachers, to devise their own courses of study and the examinations in connexion with them; and that while certain principles are common to all examinations, the precise application of those principles, in other words the design of the examinations, must be adapted to the particular purpose for which they are intended by the University in each case; so that we should regard it as beyond our scope to lay down regulations for particular examinations, and we shall limit our specific recommendations mainly to those points requiring reform to which our attention has been drawn by our reference or by witnesses. But before doing so, there is one matter of deep importance to which we wish to draw attention because it affects the design of all examinations.

12. In Chapter XVII[1] we have pointed out that the best of examinations can only be a partial test of that training which

[1] Para. 43 and conclusion.

it is the business of a university to give. If examinations put to the test certain qualities, intellectual and moral, of the candidates, some of the highest qualities which it is the purpose of a university to develope, and which a degree ought to imply in the majority of students who obtain it, cannot be tested at all by examination; and if our examinations are so designed as to absorb the whole time and energies of a student, to leave him no time for the free play of mind and body, for intellectual and physical culture in its best sense, the university training will fail of its purpose, the University degree will be bereft of its most important connotation. There should be no laxity in the demands of examiners, no juggling with marks to make an undeserving candidate pass. But the demands of the University should be such that a student's life is not, as it seems to be at present in many cases, spent in bondage to the examination system. We feel sure that the Examinations Board will recognise the fact that it will be a part of its duty to use its influence to prevent examinations from encroaching beyond their legitimate domain.

III.—The standards of existing university examinations.

13. We were empowered in our reference to enquire into the general standards of examination of the University. To investigate these standards generally would have required the appointment of a series of expert bodies to deal with the various subjects involved; and in view of our recommendations for a change in the whole teaching and examining system of the University, we think a detailed investigation of such a kind would be wasteful at the present moment; while we have provided by means of the Examinations Board for a 'continuous audit' of the university examinations in future, to be supplemented by the periodic visitations of the Visitor.

14. But if we are not in a position to report on the standards of all the various examinations of the University, certain conclusions in regard to them flow inevitably from the evidence we have received and from the observations which we have ourselves made. There can be no doubt that the present examinations can be passed in a very large number of cases by pure memory work. We have shown in Chapters IX and XVII that the standard for matriculation is undoubtedly too low, especially in English

and mathematics. The lowness of this standard admits to the University a large number of students who cannot reach a proper standard at the intermediate stage, and such admission affects at once the quality and the methods of the work done. This is particularly the case with English and there is evidence that the command of English of some students who obtain the M.A. degree in English is defective.[1] While it has been stated that the standard has been lowered in recent years, we have received no conclusive proof in support of, or in opposition to, that statement. But it is clear from the tables given in Chapter XVII[2] that the requirements of the Calcutta University for a first division at matriculation, and for first classes at the intermediate examination, must be markedly different from those of other Indian universities. We should be sorry nevertheless to see any hard and fast rule made applicable to all universities alike in such a matter. We can imagine that a standard for a first class might be made unreasonably high in certain cases as well as unreasonably low in others, and we regard the matter as one for conference between the different universities. If our proposals are accepted, the periodic visitations which we propose will no doubt direct public attention from time to time to such discrepancies of practice between the various universities.

15. The standard of examinations is often supposed to be dependent very largely on the percentage of marks required for a pass, but we have repeatedly drawn attention to the difficulty of attaching any precise meaning or value to a 'pass' in terms of what the successful candidate ought to be able to do. It is clear that the 'mechanical system' of marking, devised to ensure uniformity of treatment in the larger examinations, as it is frequently practised, may allot marks to the unimportant portions of an answer and leave out of consideration the important, so that, as many examiners point out, the regulations force them to pass candidates who in their opinion ought to be rejected, and to reject candidates who ought to pass.[3] In these circumstances it is difficult to regard the 'standard' of the examination as in any sense a measurable quantity. Reform in this matter is not so much

[1] Chapter IX, paras. 8-36 and XVII, paras. 45-60.

[2] Paras. 133 and 136; see also Chapter XXXI, para. 70.

[3] Chapter XVII, paras. 64-68.

a matter of regulation as of the application of common-sense rules such as have already been adopted by some boards of examiners in the University of Calcutta. It must be remembered that in many subjects the more widely the examination departs from being a test of memorisation pure and simple, the more the examiner is bound to rely on his own individual judgment of the performance of the candidate.

16. Rules may serve negatively to prevent irregularities in examination; they may even debar examiners, as we have seen, from making the best use of their judgment; but however well devised the rules may be, the ultimate value of an examination test must depend largely on the personal judgment and common sense of the examiners. Numerical marks serve in certain cases to conceal that obvious but fundamental fact; as well as the no less fundamental fact that within certain limits the personal judgments of examiners are bound to differ and to affect the certainty of the results to that extent. It will be part of the duty of the Examinations Board to investigate scientifically the probable variations of marking between different examiners (and between the markings of the same paper by the same examiner at different times). These variations have been sometimes treated in the past as if they were negligible. The statistical investigations of Professor Edgeworth show that they are on the contrary considerable and should be taken into account in estimating the trustworthiness of examination tests, especially in competitive examinations.[1] It occasionally happens that important awards are made on the strength of differences in marks which are much smaller than the inevitable error by which such marks, like the record of all scientific observations, are affected. We must not be misunderstood. By 'error' here, we do not mean avoidable error due to oversight or carelessness, which could be remedied by re-examination of the results; we use it in the technical sense in which it applies to the most refined measurements of the astronomer or the physicist, who recognises that such measurements can only be regarded as accurate to within a certain fraction of their value and regards it as part of his regular routine to estimate the magnitude of that fraction. The unavoidable 'error' of the examiner is rarely taken into consideration. A new rationale of examinations based

[1] Chapter XVII, para. 131.

on fresh investigation is necessary in order to diminish the unintentional injustices to candidates which result from the present rough and ready system of dealing with large numbers, especially in respect of candidates near the border-line.

17. Even apart from such investigation the difficulties and uncertainties of standard and of numerical marks will, we think, be largely diminished if fairly precise verbal definitions are given of the meaning to be attached to a 'pass.' We have illustrated in detail this point in Chapter XVII[1] in connexion with the matriculation standard in English, and shall not repeat our argument here.

IV.—Boards of Examiners.—Appointment of external examiners.[2]

18. *Boards of Examiners.*—In most cases the setting of examination papers and the correction of answers or the conduct of *viva voce* and practical examinations is entrusted not to a single examiner but to a board.

We think that Boards of Examiners[3] should conform to the following principles :—

(1) They should include teachers of the University (that is teachers who have been 'appointed' or 'recognised'); and, in the case of examinations for pass degrees, honours degrees, and higher degrees, teachers actually engaged in the teaching for the degree in question should be included in the Board.

(2) They should always, if practicable, include one or more external examiners, *i.e.*, persons not connected with the University of Calcutta. We think that such examiners should, whenever possible, be teachers in other Indian universities or should have had recent teaching experience in the subject; but there may be cases where no persons within these categories are available, and in such cases other persons with expert knowledge might be appointed as external examiners.

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[1] Paras. 45-50.

[2] Chapter XVII, paras. 118-130.

[3] We have explained in Chapter XVII, footnote to para. 118, that by a Board of Examiners we do not mean a permanently constituted body.

(3) The Boards should, as a rule, be small bodies, aided if necessary by assessors, to set papers and mark the answers in special subjects. The work of correction should in the case of the larger examinations be in part carried out by members of the Board, in part by assistant examiners under the direction of the Board. It would of course be of advantage if each script could be marked independently by two examiners. But though this method might be adopted in some cases we are unable to advocate its general adoption on account of the expenditure of both time and money involved.[1]

(4) The internal members of the Boards (*i.e.*, the members other than the external examiner or examiners) should be appointed annually by the Academic Council, after report from the Faculty and, as a rule, from the Board or Boards of Studies concerned through the Faculty. In the case of subjects in which the chief teachers carrying on the work for the examination are too numerous for all of them to serve each year on the Board, a certain number of the internal members of the Board (say, one half, or one third) should be ineligible for re-appointment until a certain period has elapsed (two or three years or more, as the case may be) from the date of vacation of their seats on the Board. In this way every such teacher (unless he proved himself unsuitable for examining purposes), would be able to serve in turn on the Board and to bring his quota of experience and capacity to the work of examining. We think that, as far as practicable, the university professors in a subject should act as permanent members of the relevant Board or Boards of Examiners.

(5) Each paper for a given examination should be drafted in the first instance (say) by two members of the Board in consultation; and all the papers in a given subject for one examination should as a rule be considered by the Board at a meeting and finally settled by the Board,

[1] Dr. Zia-ud-Din Ahmad is of opinion that the independent examination of each script by two examiners is necessary in all cases.

or, in the case of a relatively large Board, by a special sub-committee.

We attach great importance to this recommendation, especially in the case of honours examinations where a large number of papers are set by a single Board. It is obviously desirable that the nature of the examination test in each subject or group of correlated subjects should be considered as a whole by the examiners before it is finally approved.[1] It would, of course, be neither practicable nor necessary to consider together papers set for the same examination on unrelated subjects for which different Boards were responsible.

(6) In the case of pass examinations involving a number of subjects, the Board for each subject should depute two of its members, one internal and one external examiner, to attend a joint-meeting to discuss and settle such doubtful cases as are now referred to the Syndicate, or decided by the award of compensation or grace-marks.[2] The joint-meeting should be presided over by the Vice-Chancellor, or his deputy. The meeting should not have the power to reverse the decisions of any Board which reported that a candidate had failed in the subject within its purview, except as might be provided in respect of any particular class of cases by University Ordinance or Regulation.

(7) In the case of honours examinations, the class-list should be settled by the vote of the Board as a whole.[3]

19. The appointment of external examiners should, we think, be made by the Executive Council, after report from the Faculty concerned and the Academic Council, the Vice-Chancellor having power to act in such cases of emergency as are bound to arise. It should be within the power of the Executive Council to demand reports from the external (as well as the internal) examiners on the standards and general conduct of the examinations in which they take part. We think that external examiners should be re-appointed

[1] Chapter XVII, para. 130.

[2] *Ibid.*, paras. 77-78.

[3] If examiners representing subsidiary subjects act as members of the Board, they should only vote in regard to questions relating to those subjects.

yearly, but that they should normally serve for a period not exceeding (say) four years; and that they should become eligible for a fresh term of office after an interval of (say) two years. But owing to the difficulties of obtaining experienced examiners from a distance in India, we think it would be impracticable to lay down rigid rules in this matter.

V.—Miscellaneous recommendations.

20. *Non-publication of names of examiners. Prohibition of communications between candidates and examiners.*—It has been suggested to us that the names of examiners should be kept confidential. The only reason for the suggestion is that communications from the candidates to the examiners would thus be prevented. We see no reason why the names of examiners should be made public until after the conclusion of an examination; but in any case the regulations issued to candidates should inform them that any communication in regard to their examination should be made to the Registrar, and that any attempt to communicate with the examiners is strictly forbidden and may involve the cancellation of the current entry and exclusion from future examinations. It should also be made obligatory on examiners to forward without delay to the Registrar any communication received from a candidate, so that he may deal with it. Such communications, if of an improper character, should be dealt with by the Vice-Chancellor as a matter of discipline, and reported by him, if he thinks fit, to the Academic or to the Executive Council.

21. *Anonymity of candidates at examinations.*[1]—We think that in all large examinations, such as the present matriculation examination, numbers should be used instead of names to designate the candidates, in order to preserve their anonymity. We desire to state quite clearly that no evidence has been produced of any unfairness arising from the present system. But we think, as we have pointed out in Chapter XVII, that there is nothing to be gained by the use of names at examinations of this kind; and that it will be in the interest of the body entrusted with the conduct of the examinations corresponding to the present matriculation and intermediate examinations to follow in this matter the example of the University of London in the conduct of its external examinations.

[1] Chapter XVII, paras. 141-143.

The examinations of a teaching university may be treated differently. We have pointed out that where examinations in a teaching university include practical and *viva-voce* tests, or the examination of course-work, or of a thesis, anonymity is difficult, and often impossible to secure; we advocate the use of such tests and we think it better that in such cases the candidates should be known by name to all the examiners concerned rather than only to some of them.

22. *Course-work.*—We have dealt with this question in Chapter XVII, paragraphs 112-114. We think that the University may in many cases require candidates to submit for inspection laboratory note-books certified by the teachers; but that it is only in cases like that of engineering drawings, of which the value can be directly assessed by the examiners, that marks should be allotted for such course-work; in other cases, the different standards adopted by different teachers would make it impossible to allow their marks to be counted as examination marks in an examination which could be regarded as in any sense competitive or in which the candidates were arranged in classes, unless such course-work had been marked in all cases by the same teachers, an eventuality that would be rare in a multi-collegiate university like Calcutta, but would present itself oftener at Dacca; but on the other hand we think such marks might be taken into account in border-line cases, and determine passing or rejection, as the case might be.

23. *Viva-voce examinations.*—We are strongly in favour of an increased use of *viva-voce* examinations especially, but not only, to test the candidate's knowledge of foreign languages, including English.[1] The only difficulty involved is one of time and expense. We think such examinations should be conducted, if possible, by not less than two examiners.

It is to be pointed out that the present methods of teaching in the University, under which the student is a silent recipient of untested knowledge for the greater part of the year, are hardly calculated to give them the alertness and readiness required for a *viva-voce* examination. Radical changes in methods of teaching, and especially the introduction of the tutorial system, are required before any system of *viva-voce* examinations can be made fully effective.

[1] For intermediate college and high school examinations, see Chapter XXXI, paras. 40 and 47.

24. *Practical examinations.*[1]—We recommend that in most University examinations in scientific subjects practical work should form part of the examination and that candidates should be required to satisfy the examiners in this part of the examination as well as in the written part.

25. *Alternative questions.*—We have discussed this matter in Chapter XVII, paragraphs 57-60. It is one that should, we think, be left as a rule, to the judgment of the Boards of Examiners concerned. The practice of 'window-dressing' by setting difficult questions to which there are easy alternatives, condemned by some of our witnesses, is one obviously to be discouraged; but, as we have shown, there are certain cases in which alternative questions are desirable. Where they are set it is clear that, unless notice is given, equal marks must be assigned to them; and the adoption of this principle ought to prevent any marked difference of difficulty between the alternatives.

26. *Examination by compartments.*—We have discussed this question in detail in Chapter XVII, paragraphs 86-96. We do not wish to make general recommendations applicable to all examinations. But we think that examination by compartments has worked successfully in the Faculty of Medicine in this and other universities and that its use is justifiable in certain cases, of which the University itself must be the judge. The matter should be dealt with by Ordinance.

27. *Compensation or grace marks.*[2]—We think the present automatic system of grace marks should be abolished for all final examinations; but that some form of 'compensation' is permissible at intermediate examinations in respect of subjects which are not essential for the candidate's future studies and in which the candidate is near the border-line; such compensation to be granted only in cases where the candidate shows real excellence in other subjects.

28. *Classification.*[3]—We recommend that at examinations in which an order of proficiency (or merit) is now adopted, alphabetical order be substituted therefor in each class in the list.[4] But we do not

[1] Chapters XVII, para. 110, and XXXI, paras. 40 and 47.

[2] Chapter XVII, paras. 77-81.

[3] *Ibid.*, paras. 133-140.

[4] Dr. Gregory does not agree that this recommendation should be applied to all classes and subjects.

think this should preclude the award by the University of a scholarship or studentship on the results of an honours examination, nor the award of the mark 'deserving of scholarship' to a student, who though not equal in proficiency to the successful candidate of the year in question might have been awarded the scholarship in another year. We have recommended that at the high school examination students who pass in the examination as a whole, and who obtain exceptionally high marks in a particular subject, should be awarded a mark of distinction, irrespective of the class awarded to them on the aggregate of marks[1]; and this method of recognising exceptional excellence in single subjects might perhaps be adopted at the intermediate college examination and other examinations for which it seemed suitable.

29. *Checking of marks.*[2]—Every public examining authority owes it as a duty to its candidates and to the public to take all reasonable precautions to ensure that no candidate is either rejected or passed in error. In examinations with many thousands of candidates, in which individual examiners each correct several hundred scripts, the commission of a small number of numerical errors in the first instance is almost inevitable; but they should be eliminated as far as possible.

30. In at least one other university the marks inserted on the scripts by examiners at large examinations are checked by a special staff of temporary clerks engaged for the purpose; but we do not think this system applicable in the present instance. We suggest that it would serve to check the addition of marks and to avoid answers being overlooked, if each examiner were required to insert the marks for each question (including marks, if any, allotted for general impression, or 'special excellence') on a 'roll-book', and the roll-book were then checked by a clerical staff. No corrections of marks should in any case be made without being referred to the original examiner or assistant examiner concerned or, in cases of urgency, to the head examiners, for confirmation and signature.

This suggestion does not pretend to exhaust the subject. We have, in paragraph 18 (3) above, proposed that in some cases, though we do not think it possible in all, scripts might be marked

[1] Chapter XXXI, para. 70.
[2] Chapter XVII, para. 85.

independently by two examiners; and other checks may no doubt be devised.

31. We think the right of candidates to have their marks scrutinised when their college authorities think their request reasonable, must, in existing circumstances, be continued; and that in cases where an error is discovered which affects the result of the examination, the fee for scrutiny should be returned to the candidate.

Further, steps should be taken to deal promptly with any request for a scrutiny of marks. At present delays sometimes occur in dealing with them which inflict serious hardship on the candidates.

32. *Re-examination of papers.*—Our attention has been drawn to a particular anomaly relating to the re-examination of papers under the existing system. If a candidate fails in a single subject, as a matter of precaution, his papers in that subject are re-examined (Regulations, Chapter XXV, paragraph 7). Now under the system adopted by the University for a number of its examinations (including the matriculation and the examinations for the first degrees in arts and science) candidates must not only obtain a minimum number of marks in each prescribed subject of the examination, but must obtain an aggregate which exceeds the sum of these minima; but the papers of a candidate who passes in every subject but falls short even by a single mark of the prescribed aggregate are not re-examined as in the former case. We think that if the principle is adopted of re-examining the papers of border-line candidates (and the safeguard is a wise and just one under existing conditions), the latter class of candidates seem to have no less claims than the former to such re-examination. On the other hand if sufficient precautions are taken to ensure accuracy of marking in the first instance, re-examination at this stage may not be necessary. We do not make a formal recommendation on this subject, but wish to direct the attention of the University to the necessity for equality of treatment of the border-line candidates in the two categories referred to.

33. *Interval between the conclusion of an examination and the announcement of the results.*[1]—We recommend that in all cases the University should fix beforehand the maximum interval which will be allowed to elapse between the commencement of an examina-

[1] Chapters XVII, para. 165, and XXXIX, para. 33 *ad fin.*

tion and the announcement of the results. This is a practice which is followed in so many universities that it cannot be regarded as impossible in Calcutta, still less in Dacca; and our recommendations should apply to the examinations of the Secondary and Intermediate Board as well as to those of the University.

34. *Re-attendance at courses by students who have failed.*—We have in Chapter XVII[1] expressed the view that the present requirements in regard to the re-attendance at courses by students who have failed and desire to re-present themselves for examination are unduly stringent and that they should be relaxed. But, as we have shown, the matter is a complex one; each examination will need separate consideration; and it will be for the new authorities to frame such rules as they think desirable. We wish to emphasise the point that students ought not to be debarred from such re-attendance if there is room for them in the classes in question. The question of re-attendance should be dealt with by Ordinance.

35. *Limitation of the number of appearances at the same examination.*[2]—We are unable to accept the suggestion that the number of appearances at one and the same examination should be limited by university regulation. The only reasons for imposing such a limit are on the one hand to prevent a young man in his own interest from following a career for which he is by nature or temperament little qualified, and on the other to prevent such a candidate from occupying a place in a college which would be more profitably filled by some one else. In cases where re-attendance is not required by university regulations the second point does not arise and we think the University should not refuse to re-examine the candidate unless there is some specific ground for such refusal. In the numerous cases in which re-attendance is necessary, we think it should be for the college authorities to decide whether they will admit or re-admit the candidate in question to their classes. We feel sure that such a right would not be exercised more harshly in the future than it has been exercised in the past. It is clear that the college authorities are in the best position to judge whether the student can or cannot continue his studies with profit.

36. *Frequency of examinations.*—The desirability of holding examinations in all Faculties and subjects more frequently than

[1] Paras. 101-102.

[2] Chapter XVII, paras. 105-107.

once a year has been pointed out by a number of witnesses.[1] But the multiplication of examinations involves serious expenditure of time and money, and we think this matter must be left to the consideration of the new university authorities.

37. *Test-examinations.*[2]—We recommend that the formal 'test-examinations' now in use by schools and colleges be dispensed with. But their abolition should not in any way affect the power of a college to give or withhold the certificates of satisfactory attendance and diligent work which the University will demand as a qualification for entrance to university examinations. Such certificates would however be based on the whole course of study, and possibly on a series of terminal examinations, instead of on a single 'test-examination', and would not involve the existing strain of the present system, which amounts to making the student pass all his university examinations in duplicate. Under the scheme which we propose the whole university system of supervising a student's work and progress will be more continuous and thorough and at the same time more elastic.

38. *Reduction of interval between the conclusion of a university course and the entrance to the corresponding examination.*[3]—We recommend that steps be taken to reduce the intervals between the conclusion of university courses and the commencement of the university examinations, which are in certain cases excessive. The discontinuance of formal test-examinations will no doubt reduce these intervals to some extent. We see no objection to a short period being allowed to candidates for the revision of their work, though such revision within limits might properly form part of a college course; but any undue prolongation of the period leads to reliance being placed on it by students to 'cram' for the university test; to waste of opportunities during the college course, as well as to undue strain at the end of it. It is clear that sufficient notice of entries must be given to the University to allow it to make proper arrangements for the conduct of an examination; but, as we have suggested in Chapter XVII, the colleges might send in provisional entries two months (or more if necessary) before an examination, subject to the right, later, say three weeks before the

[1] Chapter XVII, para. 103.
[2] *Ibid.*, para. 151.
[3] *Ibid.*, para. 154.

examination, to cancel the entries of those students who had not fully satisfied the university requirements in respect of attendance.

39. *Requirement of attendance at courses on subjects in which no formal examination is held.*—We have discussed this point in Chapter XVII, paragraphs 160-167. We are of opinion that in certain cases it is desirable to widen the outlook of a student by instruction in subjects collateral to his main branch of study without necessarily imposing on him the burden of a formal examination in those subjects. The objection that Bengali students are so constituted that it is hopeless to ask them to learn anything on which they will not be examined may at present apply to some students. We decline to believe the statement to be permanently and universally applicable to the majority, least of all to the more distinguished and active students—and to make regulations which render impossible attendance at any lectures which are not prescribed for examinations is an evil policy. A middle path might be taken in respect of such courses as we suggest by requiring from each student a certificate from the lecturer that he has attended regularly and worked diligently. With the elastic constitution of the University which we propose it will, in this, as in other matters, be able to experiment until a satisfactory solution of the problem is found.[1]

40. *Text-books.*—We have discussed this question in Chapter XVII, paragraphs 156-157, and, in respect of English at the matriculation examination, in Chapter XVIII, paragraphs 109-111. In the great majority of cases the University has left teachers and candidates free to choose their own text-books, and there is no reason why this should not continue. In the higher language examinations it is desirable to prescribe texts for more exact study; and the main question in dispute is whether texts should be prescribed for language examinations at the earlier stages. We think it undesirable to pronounce any final opinion on this point; it is one on which the University and the Board of Intermediate and Secondary Education may well experiment and watch the results of experiment over (say) a period of three or five years, the

[1] In Chapter XXXI, paras. 63-68, we have discussed the question of requiring certain subjects to be included in the curriculum of high schools without insisting on an examination in them. See also the scheme for the high school examination in para. 70 of that chapter.

results being considered before the end of the period with a view to such modification of the regulations as experience may show to be desirable. We think it an excellent plan for the University, wherever possible, to print and publish its own prescribed texts.

41. *Selection of alternative subjects.*[1]—This is a matter which has been dealt with in Chapter XXXIV, paragraphs 35-47, and need not be further discussed here.

42. *Special university entrance examination for candidates above the normal age.*—We think it possible, though it hardly occurs at present, that with the development of industrial and commercial education in Bengal, men who have followed other careers may wish to enter the University comparatively late in life. The Committee presided over by Sir J. J. Thomson, who have recently reported on the position of natural science in the educational system of Great Britain, have considered the point, and write as follows :—

"It seems unreasonable to expect that such candidates should show the same knowledge of the subjects of a secondary school course as may fairly be required of school boys. We therefore recommend that the universities should not require them to pass the ordinary matriculation examination, but should make special arrangements to test their fitness to enter on university work. We have ascertained that most universities favour such a change. The number is not likely to be so large that a special test of each individual candidate would present serious difficulties."[2]

The Committee recommend that this exceptional mode of admission should be limited to candidates over 23 years of age. We agree fully with the general view adopted by the Committee; but we think 23 would be too low an age for admission by such special examination under Indian conditions, in view of the number of persons who already matriculate not much below that age. It is essential that any such mode of entry should not be regarded by large numbers of candidates as an alternative to the ordinary entrance examination, and so lead them to postpone their university studies in order to avail themselves of it in the hope that it may be an easier mode of access to the University. We do not think that any such special entrance examination should be open in India to candidates under the age of 25.

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[1] Chapter XVII, paras. 168-169.

[2] *Natural Science in Education*, published by H. M. Stationery Office (1918), para. 134.

43. *Research-degrees.*—We are not in favour of conferring the bachelor's degree for research under existing Indian conditions. Such degrees may be suitable for candidates who have specialised in scientific work without having attended a university and who enter the university at a relatively late age. But at present the number of such students is small in Great Britain; we believe the class to be non-existent in Bengal. If the need for such degrees should arise they can be instituted later by Statute. We have discussed elsewhere the award of the M.A. and M.Sc. degrees by research. The doctorates will of course be given for research as heretofore.

44. *Non-collegiate students.*—We understand that the vast majority of those now classed as 'non-collegiate' students are either (1) women-students, (2) teachers, or (3) students who are regular students at a college of the University but have not satisfied the regulations in regard to attendance; and that this last category consists very largely of students who have failed in one or more subjects, and who as collegiate students would be required to re-attend the whole of the courses of study in connexion with the examination.

The question of women's education has been discussed separately in Chapters XIV and XXXVI.

If, as we suggest, the present regulations in regard to attendance and re-attendance are made less rigid, the number of non-collegiate students will be very greatly reduced. We do not wish to see the special privileges extended to teachers diminished. But we think that no student in attendance at a college should be admitted in future as a non-collegiate student. The term, as applied to such students, is a misnomer. If, with the concurrence of the college concerned, the University, in cases where a candidate has been debarred from full attendance by illness or some other special cause, feels justified in relaxing its requirements in his favour, it will be able to do so; but the central university authorities ought not to be able to override the decision of the college authorities in cases where they state that a student's attendance is insufficient. We understand that the University has consistently supported the colleges in this matter in the past. Any contrary policy would seriously affect the discipline of a college.

We think that relaxations of the requirements in regard to attendance ought only to be granted in exceptional cases.

We have stated in Chapter XVII our strong reasons for rejecting the suggestion that the university examinations should be generally opened to 'external students.'

45. *Secrecy of examination papers.*—We have discussed this topic in Chapter XVII, paragraphs 144-147. We have also suggested that better arrangements should be made for the isolation of the university offices.[1]

VI.—Examinations of the Board of Secondary and Intermediate Education—Question of the sub-division of large examinations.

46. *Examinations of the Board of Secondary and Intermediate Education.*—We propose that the present matriculation and intermediate examinations should be transferred to the control of a Board of Secondary and Intermediate Education.[2] Many of the difficulties, and especially the difficulties inherent in the conduct of large examinations, will be transferred, under our scheme, from the University of Calcutta to that Board, which will need a committee corresponding in its functions to the Examinations Board of the University. In view of the size of the examinations, we think the services of such a committee will be of even greater necessity for the Board of Secondary and Intermediate Education, than for the University. Possibly the latter Board might be able to refer questions to the university organisation, or some joint arrangement might be made between the University and the Board for the employment of the experts of the University in dealing with examination problems.

47. One of the questions which will need the immediate attention of the Board is whether both from the educational point of view and the point of view of practical expediency it might not be desirable to sub-divide the larger examinations. It may seem at first sight that to provide a single set of examiners and of examination papers for, say, 16,000 candidates, is more economical in every way than to provide separate groups of examiners and of examination papers for two groups

[1] Chapter XXVII, paras. 44-46.

[2] See Chapters XXXI and XXXII.

of 8,000 candidates or four groups of 4,000 candidates. But it is to be remembered that the time consumed between the holding of the examination and the announcement of the results is a period of uncertainty for the candidates during which it is impossible for them to frame any plans, and is often time wholly wasted; and to waste many weeks and even months of the time of 16,000 candidates is a serious matter. Now the responsibility for the co-ordination of the examination results in each subject at an examination like the matriculation must necessarily rest with a few head-examiners, and the time spent in that co-ordination will be, roughly speaking, proportional to the number of candidates in the subject—or at any rate to the number of assistant examiners employed for it. An increase in the number of assistant examiners diminishes the time taken by each in the correction of the scripts, but increases the time taken by the head examiners in co-ordinating the standards of the body of assistant examiners as a whole. There can be no doubt that the reduction of the number of candidates dealt with by each set of examiners from 16,000 to 4,000 would materially accelerate the process of examining. Such sub-division is of course not inconsistent with the use of the same examination papers for all the groups. But we should stipulate that the persons who act as head examiners for the group should themselves have been concerned in and have shared the responsibility of setting the papers for that group. Many questions of principle in marking an answer may arise which can only be properly determined by the persons who have set or taken part in setting the question. If different papers were set for the different groups it might be objected that there would be a variation of standard; but this should not exceed the variation which now takes place from year to year; and if the groups were arranged territorially, which might be convenient in arranging meetings of examiners, the examiners acting on one occasion for a territorial group A might act on another for territorial group B, and so on; or there might be an interchange of examiners for the various groups. We have suggested in Chapter XXXI[1] that the intermediate college examination and, in some cases, the high school examination, should be conducted partly by means of written papers which would normally be common to all the

[1] Paras. 40-49.

colleges teaching the subjects in question, partly by means of oral and practical examinations conducted in the colleges.

48. In examinations on a large scale there is, as we have pointed out, a tendency to sacrifice the real purpose of an examination to uniformity of marking; to set questions of which the chief merit is that they lend themselves to such uniform treatment and make the least possible demand on the examiners' time and judgment. This is almost inevitable; and on this account we should prefer the matriculation examinations to be reduced within reasonable limits by some such method of sub-division as we have suggested; although it might perhaps be urged that the reduction would not be sufficient materially to alter the character of the examinations. Here again we do not profess to have reached any final judgment; and we think new measures must be taken to deal with defects as they become apparent. We have suggested that every examination should be periodically inspected, with a view to ascertaining whether it is really fulfilling the purpose for which it is designed; it is in large examinations that such inspection is most necessary, owing to their tendency to become mechanical.

49. The sub-division of the candidates into small groups might involve some rearrangement of the machinery of distribution of answer books; but we do not think that such multiplication of examinations need involve serious additional expense; that is however a point which could not be settled without detailed enquiry. In any case the saving of the time of the candidates is a matter of important public interest which ought not to be overlooked.

VII.—The future of examination reform.

50. Huxley, in one of his essays, points out that every reform may be an obstacle to future reform. In making our proposals we have tried to guard against this danger, nowhere more to be feared than in examination routine. We have suggested that the University should define the purposes of its examinations as part of its larger purpose of training its students to take their full share in every department of the communal life. But while frequent and uncertain changes of regulations might seriously affect the organisation of university teaching, it is to be remembered that important social changes are in progress in India, as in the rest of the world; and that while the purpose of the University as a whole

may be defined in such general terms as to need little modifications, its courses of training must necessarily undergo changes to meet fresh needs, and with them the purpose of its several examination tests. By placing those tests largely in the hands of teachers, and, we hope, of teachers who will to an increasing extent take part in developing their subjects as well as in teaching them, we trust that the tests will no longer control the teaching, as in the past, but will be modified in accordance with the new demands of learning and with the growing needs of the careers to which the University students are destined.

CHAPTER XLI.

The medium of Instruction and Examination. The Teaching of English.[1]

I.—The question of medium in the University and in secondary schools.

1. We have seen in Chapter XVIII that since the introduction of western education into Bengal, it has been the steady policy of the Government to cultivate a bilingual system in the schools; to use English for the communication of western knowledge in subjects where that was the only medium possible; but to encourage the study and development of the vernaculars so as to render them more and more capable of conveying ideas that a century ago could only be communicated through the medium of English. What is the position to-day in Bengal? How far is it still necessary and desirable to use English as the medium of instruction in secondary and university education? We shall perhaps be able to deal with our problem most conveniently if we start from the higher stages of education and deal later with the lower stages.

2. We have analysed in detail[2] the differences of opinion of our numerous witnesses on the question whether English should be used as the medium of instruction at every stage above the matriculation in the university course, and have found considerable differences of opinion on that point, rather more than half being in favour of maintaining the present system, or the present system with slight modifications, though there is a strong movement in favour of Bengali being introduced into the university curriculum for some purposes. But whether a limited use of Bengali is made in certain subjects or not, few even of the most ardent and eloquent advocates of the use of the vernacular are of opinion that Bengali has yet reached a stage at which it would suffice for the teaching of the majority of those branches of western education which

[1] Except where otherwise stated, the references in this chapter to the evidence relate to the answers to Question 11.

[2] Chapter XVIII, paras. 25-73.

form an essential part of the university curriculum. There is an overwhelming mass of opinion pointing to the use of English as the chief medium from the end of the intermediate stage upwards; and as we suggest that intermediate education should be taken before entrance to the University, it follows that in the opinion of the great majority of our witnesses the medium in the classes which we regard as coming within the purview of the University should be English. We concur in the view of the majority; indeed the evidence is so cogent that it is impossible not to accept it.

3. But we do not wish to prejudge the future. It is not for us to predict whether the natural desire to use Bengali to the utmost will eventually outweigh the immense advantages of being able to use a medium common not only to the educated classes throughout India, but to more peoples than any other, and giving access in effect to the literature and the scientific records of the world. We are disposed to think that the educated classes in the various provinces of India, will, like those of some other countries, both in the British dominions and elsewhere, wish to be bilingual; to use their mother tongues for those dear and intimate things which form part of life from infancy upwards, and which are the very breath and substance of poetry and of national feeling; to use English as a means of inter-communication necessary for the maintenance of the unity of India, and of touch with other countries; for the mutual interchange and stimulation of ideas in the sphere of scholarship and science; and for the promotion of that inter-provincial and international commerce and industry on which the economic future of India will largely depend.

4. To return to our immediate problem. It being granted that the students must receive at any rate the main portion of their university instruction in English (we see no reason why such subjects[1] as Sanskrit and Pali should not be taught through the vernacular), what preparation must the future university student undergo to enable him to acquire a knowledge of the language that will enable him to pursue his studies without difficulty — if possible, without being handicapped in any way by the necessity of acquiring an advanced mastery of a language other than his mother tongue?

[1] Chapter XVIII, para. 86, and footnote.

5. It has been suggested by a large number of our witnesses that the use of the English medium must be a heavy, and even a ruinous, handicap to the intellectual development of the Indian boy.[1] We may admit that in regard to certain cases and classes of cases their statements are not exaggerated. One witness's picture—and it is no isolated one—of his younger brothers and young children committing to memory pages after pages of books written in a language which they do not understand in order to disgorge them later for examination purposes, shows what is called English education, at any rate in its early stages, in a light which may well provoke tears or laughter. We know that most Indian students do at present pass through the stage pictured by Dr. P. Neogi, that their knowledge of English at matriculation is inadequate[2] and that their mastery of English comes later, far too late to avoid a tragic waste of both time and intelligence. Even if we admit that Mr. Barrow's verdict that the present system, under which all instruction in the secondary schools after the middle stage is given through the medium of an alien tongue, has 'failed hopelessly' may be excessive, the case for reform in both the teaching and the use of English is overwhelming.

6. We shall say at once that we think that adequate reform is well within the range of possibility; and, so far from believing that the acquirement of a second medium is a necessary handicap, we are disposed to think that it may materially assist the intellectual development of the pupils. Those of us acquainted with British conditions do not find the bilingual Welsh student in any way handicapped when he comes to an English-speaking university, nor do we think that bilingualism is felt to be a handicap to intellectual development in such countries as Belgium and Switzerland. More and more in the larger European countries are the pupils (largely by the use of the direct method) acquiring, with less than half the school time and less than half the home-work devoted in India to the study of English, a working mastery of a second living language. The results already obtained in some Madras schools show how practicable reform may be in Bengal.

[1] See, for instance, the evidence referred to in Chapter XVIII, of Mr. Brojendra Kishore Roy Chaudhury and Mr. Bibhutibhuson Datta (para. 29), of Mr. Dibakar Bhattacharyya and Mahamahopadhyaya Pramathanath Tarkabhushana (para. 30), of the Rev. W. E. S. Holland and Miss A. L. Janau (para. 33).

[2] Chapter IX, paras. 27-33, Chapter XVII, paras. 46-49, and Chapter XVIII, para. 80.

7. In dealing with reform in regard to English there are two main questions to be considered[1]: (*i*) the stage at which and the subjects in which English should be used as a medium in replacement of the mother tongue, in the secondary schools and intermediate colleges; and (*ii*) the methods actually to be used in teaching English. But we regard reform in the teaching of English as inseparably linked with reform in the teaching of the mother tongue.

8. Training in the use of the mother tongue has a fundamental and unique place in education. Rai Lalitmohan Chatterjee Bahadur, Principal of the Jagannath College, Dacca, himself an English scholar and teacher, tells us that the real difficulty of the college student is due not so much to his poor knowledge of English as to his lack of mental training, and that it is found that a student who cannot express his thoughts in English will hardly do better in Bengali. The Scottish Churches Senatus appear to be of the same opinion.[2] In other words, the defect in power of accurate expression, of which conclusive evidence has been brought to our notice, is not due so much to a deficiency in English as to a deficiency in general mental training. The testimony of Mr. J. A. Richey, Director of Public Instruction in the Punjab, points in exactly the same direction. The use of the mother tongue in India as an instrument of mental training has long been neglected in the school system. That neglect is in part due, we believe, (though only in part) to the premature introduction of English as the chief medium. There is much evidence in support of Sir Harcourt Butler's view that the boys who are taught through the medium of the vernacular until the highest stages of the high school are reached show markedly greater intelligence than those whose earlier education has been more largely conducted through the medium of English.[3] The premature use of a foreign, and half-understood, medium in teaching the ordinary subjects of the school curriculum tends to produce intellectual muddle, which is concealed more or less at the matriculation examination test by remarkable feats of memorisation; but made plain when the new stage of the University is reached. But even for those boys who

[1] Chapter XVIII, *passim*.

[2] *Ibid.*, para. 60.

[3] *Ibid.*, paras. 16-18, and 22.

are trained in the vernacular medium full use is not made of the mother tongue as an instrument of mind-training.[1]

9. It is, of course, perfectly true that a boy needs no training beyond that of the home and of every-day life in order to be able to express his own simple wants and to respond to those of others in the vernacular, by a process that becomes almost automatic, and requires a minimum exercise of the will and of the attention. It is the bare sufficiency enabling him to play his part in an organised society without any marked intellectual effort. But if more is to be demanded of him, something more must be put into his training.

10. We may roughly divide our work in life into two categories, work in which we have to follow a model and act like other people; and work in which we have to think and act for ourselves, and of which the value consists in its individuality. But such individuality can only make itself evident and effective, whether in the region of thought, or of plastic art, or of handiwork, when some mastery of the medium of expression has been attained. The child begins its mastery of the mother tongue from infancy; it is the medium in which technical mastery is first achieved; it is the medium in which individuality can first show itself and be nursed to strength.[2]

In most school subjects the pupils must necessarily conform to a model, an ideal explained to them by the teacher. If training in the mother tongue is conducted on rational lines, not only the exceptional but the average child can be shown how to set up an ideal of his own, and to try to conform to that. The essential is that in his lessons in the mother tongue he should be asked to write on subjects, easy and familiar at first, of his own individual experience, subjects of which from their nature he necessarily knows not less but more than the teacher or the rest of the class, and to explain them for the benefit of his audience. By such exercises, with skilful class teaching, he can be trained not only in the art of clear and systematic expression, but in the exercise of self-criticism and of his intellectual conscience; trained so as to

[1] In what follows the term 'boy' must be understood, in legal phraseology, to include the term 'girl.' We agree with Sir Rabindranath Tagore in thinking that the training in, and use of, the mother tongue are in India to-day of more importance, if possible, in the education of girls than of boys; Chapter VIII, para, 59.

[2] Chapter VIII, paras. 84-87.

ask himself not whether he has satisfied his teacher, but whether he has satisfied himself—and a self hard to please—in the task set before him. The guidance in such work is not easy, especially for teachers bound by another tradition; but by means of training colleges a new tradition can and must be created.

11. In such work, both at school and college, there is a technical difficulty; teachers complain that their classes are so large that they have no time to correct individual essays and explain their corrections to the individual members of the class. But that difficulty is one that can be surmounted. The art of the 'collective lesson' is one which needs to be introduced both in the teaching of the mother tongue, and of the second medium, English. A skilful and trained teacher who has read the compositions of, say, 20 or even 30, boys, in a secondary school or college can give a lesson which will bring home to the whole class the most important merits and defects of thought, of structure, and of style, displayed in the work shown up, so that the attention of the whole class is directed to the work of each member in turn, and each boy, though not at each lesson, will feel that he has been the subject of individual attention by the teacher. To pupils trained by such methods as we suggest the printed document loses its magic authority; they have learnt for themselves what sincerity in writing means, and to be alive to the signs of sham, and confusion of thought, whether in manuscript or in print. In learning to judge the merits and faults of their own productions, they have also learnt to judge those of others.

12. We have had in mind the larger and more neglected aspects of writing; but the Bengali, by tradition and instinct, has a love for the details of style. Yet we have seen little sign in the school teaching of any encouragement of the scientific study of the living tongue (either in Bengali or in English); we mean the study not only of grammar, but of word-formation (including composition and derivation) and of the development of the meaning of words, or semantics, of which the teachers in a secondary school ought themselves to have some knowledge, and of which they ought to make more and more use in the higher classes. Probably the best examples of the teaching of the mother tongue on scientific lines are to be found in the secondary and normal schools of France, a teaching which owes its origin largely to the writings of the late Arsène Darmesteter, Professor of the history of the French language in the Sorbonne, and to his other writings and those of

his pupils. We deal elsewhere with the scientific study of the vernacular, raised in Question 12. We believe that the development of such study in the universities is required to give fresh life and character to the teaching of the mother tongue in the schools.

13. But it is essential, if that teaching is to be successful, that it should be placed in competent hands and not entrusted to the least well paid of the teachers. The Commission of 1902 expressed themselves emphatically on this point.[1]

14. Unlike some of our correspondents, we regard a severe training in the use of the mother tongue not as a dangerous rival to training in English, but as the necessary preliminary to such training. It may be that by postponing the use of the English medium the supply of ready made English phrases will come a little later; but when it comes it will come to boys better able to understand and to use them. If we are to make a choice between a better education and more English words, then, with Mr. E. E. Biss who experimented in the matter, and with the other influential witnesses who have written on this point, we prefer education to mere vocabulary.

15. It is clear that we must begin with the mother tongue as the medium in all, or nearly all, subjects; and we think that English should be used as the medium in the University for all subjects except such languages as Sanskrit, Pali, and the vernacular itself.[2] The point first to be settled, therefore, is how the transition is to take place: at what stage the English medium is to be introduced for the various subjects of the curriculum; and on this the opinions of our witnesses vary greatly.[3]

16. The argument for beginning the use of the foreign medium 'at the earliest age possible' is mainly based on the fact that children in a foreign country pick up the language of the country without difficulty at an early age. But whereas in a foreign country a child is surrounded by others who speak the language of

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[1] Report of the Commission, paras. 95 and 96, quoted in Chapter XVIII, para. 18. See, on the present condition of affairs in Bengal, Chapter XVIII, para. 102; and for a further suggestion, para. 29 below.

[2] We hope that, in spite of this suggestion, advanced teaching in Sanskritic subjects may be given in the University through the English medium for students from other parts of India and from the West.

[3] Chapter XVIII, paras. 84-91.

the country, in a class room he is surrounded by others who, with the exception of the teacher, are as ignorant as himself of the new medium; it is a case of one person teaching many, not of many teaching one; and it is only by experiment that class room methods can be worked out successfully. We have not space to discuss in detail the various suggestions in regard to the age at which the English medium should be introduced; of them all perhaps Mr. H. Sharp's scheme for the gradual introduction of the English medium is the most attractive, but we think he hardly goes far enough.

17. We are convinced that the use of the English medium is at present excessive in the secondary schools, to the detriment both of the pupils' education and of the rational use of both media, and that a substantial change should be made; and we think it would probably be desirable as a rule to use the vernacular as the medium throughout the secondary schools for all subjects other than English and mathematics.[1] For English, the English medium should be used as soon as practicable; and this would follow as a matter of course if the direct method could be introduced[2]; but the possibility of introducing it depends on the supply of competent teachers. The requirement to translate Sanskrit into English ought to be abandoned; for some of the most competent teachers of Sanskrit have but an imperfect knowledge of English.[3] We do not feel able to lay down so hard and fast a rule in the case of Persian and Arabic; the case is more difficult and latitude should be allowed in the schools to suit different circumstances. In mathematics, we think English should be introduced as the medium in the fourth class from the top, and should be gradually used as the sole medium, though the teacher should not at any point be debarred from supplementing the lesson in English by

[1] For evidence in support of a change in general accordance with the scheme we propose, see Chapter XVIII, paras. 92-99. We would draw attention to the suggestion by Mr. A. C. Chatterjee that English text-books should be used in certain cases where the oral teaching is given in the vernacular. We think that the use of two text-books, the one in the vernacular (Bengali or Urdu), the other in English, identical in substance, and with the same English technical terms used in both, would probably be helpful. It would tend to avoid the introduction of a double or even triple set of technical terms (para. 27, below).

[2] For evidence in regard to the direct method, see Chapter XVIII, paras. 105-106.

[3] Chapter XVIII, para. 86 and footnote.

explanations in the vernacular where such explanations appear to him necessary.[1]

We do not regard the change which we propose as a very startling or radical one. English is supposed to be the medium in the four highest classes of the high school, classes corresponding nominally to the ages of 12 to 16—in reality, more nearly to the ages of 14 to 18—though we hope that the average school age may be reduced gradually to the lower limits. We know that in many schools it is not actually so used at present[2]; we believe that where it is used, in teaching subjects like Sanskrit and history (as we have ourselves heard it used) it often involves a grave waste of time with no corresponding advantages. The school day consists of from five to six hours, of which about half are devoted to English and mathematics; English would be spoken, therefore, under the scheme which we recommend, during half the school hours in the four highest classes. We suggest that mathematics should be taught through the medium of English not so much for the sake of practice in English as in order that the pupil may gain at an early stage the rapid and automatic use of technical terms which he will be obliged to employ at a later one. Finally we would add that we should not debar a teacher with a better command of English than of the vernacular from using the English medium in cases where his class was undoubtedly able to follow him. Such cases may occur.

18. We recommend that at the examination corresponding to the present matriculation examination the candidates, except in English, and in mathematics should have the option of writing their answers either in English or the vernacular. Dr. P. Neogi[3] suggests that unless Bengali is made the compulsory medium at matriculation the experiment of using the vernacular as the medium of instruction will not succeed. But we are not prepared to go so far as this witness suggests, especially in view of the opposition to compulsion likely to arise from Muslim quarters. Such compulsion ought, we think, only to be introduced gradually, if at all.

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[1] Dr. Zia-ud-din Ahmad and Dr. Gregory think that in many cases it would be desirable to give the teaching in geography in the four higher classes through the medium of English.

[2] See Chapter XVIII, paras. 81-83.

[3] *Ibid.*, para. 46.

19. The one serious objection to such proposals as we make is the objection of a section of the Muslim community. We would point out, however, that this objection appears to be largely based on the anticipation that English would probably suffer by the change, while we ourselves hold the contrary view. In our analysis of the evidence of the Muslim witnesses contained in Chapter XVIII, paragraphs 63-73, we have shown that Muslim opinion is divided on the question of the medium into three sections : those in favour of the present system,[1] who form the majority of those who have contributed opinions on this point; those in favour of using the vernacular medium[2]; and those who advocate parallel sets of schools or parallel classes[3] in the same school, the one set using English as the medium and the other the vernacular.[3]

20. As to the vernacular of the majority of Musalmans in Bengal there can be no doubt. Speaking to a Muslim educational conference at Burdwan in 1916, Maulvi Abdul Karim pointed out that the mother tongue of most of the Musalmans is Bengali.[4] He understated the case when he excepted only a microscopic minority; for according to the census of 1911 out of the total of 24 millions there are about 2 million Musalmans in Bengal whose vernacular is Urdu, and for whom special provision must be made.[5]

21. On the other hand witnesses like the Muslim deputation of Calcutta[6] and Shams-ul-Ulama Abu Nasr Waheed urge that to deal with subjects in the upper classes in schools the ordinary Bengali will not suffice, and that a form of Sanskritised Bengali, unintelligible to the Muslim boy who takes not Sanskrit but Persian or Arabic as his classical language, will necessarily be used. The Shams-ul-Ulama, like Nawab Syed Nawabaly Chaudhury[7] and other witnesses, further points out that the 'Musalmani Bengali' of the Musalmans differs considerably from the ordinary Bengali of the province.[8]

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[1] Chapter XVIII, paras. 63-68.

[2] *Ibid.*, para. 69.

[3] *Ibid.*, para. 70.

[4] *Ibid.*, para. 71.

[5] Census for 1911, Volume V, Part I, page 386.

[6] General Memoranda, page 212; quoted in Chapter XVIII, para. 63.

[7] Question 4.

[8] The Muslim deputation of Calcutta also pressed the point that technical terms in Bengali must necessarily be taken from Sanskrit, a point which we discuss below (para. 27).

We think there would be substance in these suggestions as applied to the teaching of subjects at the university stage; but that as applied to the teaching of such subjects as history, geography, and the elements of natural science up to the present matriculation stage, their validity is greatly diminished. The ideas conveyed to the average school boy are not so difficult as to need recondite language; the fear expressed by Shams-ul-Ulama Abu Nasr Waheed that the increased use of Bengali in the schools up to the present matriculation stage will lead Muslim boys to take up Sanskrit instead of Persian or Arabic as a second language may not be unfounded, yet the substitution of English for Bengali as the medium does not make Arabic or Persian any easier to learn; and we are convinced that the changes which we propose will be, in the long run, and on educational grounds, no less in the interest of the Muslim than of the Hindu pupils. We find it difficult to accept the view that a boy whose home language is Bengali, and who has been taught up to the age of 12 or 14 in all the subjects of the curriculum in ordinary Bengali, will find any undue difficulty in continuing to learn some of those subjects in ordinary Bengali during the remainder of his attendance at a secondary school.

22. The educational advantage of using the vernacular as the medium in the secondary schools is put as strongly by Maulvi Tassadduq Ahmed, the Assistant Inspector of Muhammadan Education in the Burdwan Division, as by any other witness[1]; and Kazi Imdadul Huque, head of the Calcutta Training School, and other educational authorities belonging to the Muslim community take the same line.

Further, Mr. A. H. Harley, the Principal of the Calcutta Madrassah, Khan Bahadur Aminul Islam, and Khan Sahib Maulvi Mohammad Yusuf, the head of the Anglo-Persian Department of the Madrassah, while they urge that English should be the medium not only in the University, but in the four highest classes of the high school, tell us that now that the Musalmans of villages have entered the ranks of students, it seems likely that Bengali will come to occupy a large place among the educated Musalmans and

[1] Chapter XVIII, para. 69.

that it is strongly felt in some quarters that it is needed in ordinary competition with Hindus.[1]

But, if the majority of the Muslim community desire it, we see no reason why in schools solely used by Muslim boys the present system might not be continued until the community as a whole is as convinced of its disadvantages as a strong section of the community are already. In mixed schools we do not think the system should be continued.

23. Schools attended only by boys whose vernacular is Urdu should be staffed by Urdu-speaking teachers, and in such schools Urdu should play the same part as a medium that Bengali will play in Bengali-speaking schools.

24. We presume from the evidence of Mr. J. R. Cunningham that, owing to the multiplicity of vernaculars in Assam, the only possible medium of education in the higher forms of high schools in that province is English[2]; and this would probably hold good in Darjeeling and to some extent in Chittagong. We do not feel in a position to express an opinion in regard to Burma.[3]

25. *English and the mother tongue at the intermediate colleges and the intermediate college examination.*—We have up to the present said nothing in this chapter of the teaching of English in the intermediate colleges; but it is to the teaching in these colleges that we look for the most rapid improvement in the English teaching. We have suggested that at the matriculation stage the candidates should have the option of using the vernacular in all subjects except English and mathematics; but we think that at the intermediate college examination, which will serve not only as the future university entrance examination but as a terminal examination for many students going into other careers, such as teaching, industry and commerce, the medium should be English; and we have discussed in an earlier chapter[4] the kind of teaching and the kind of teachers that will be required for enabling the average boy to obtain a knowledge of English adequate to enable him to pursue his university studies without difficulty through the English medium. We believe that with the scheme which we propose the

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[1] Chapter XVIII, para. 68.

[2] *Ibid.*, para. 74.

[3] *Ibid.*, para. 75.

[4] Chapter XXXII, paras. 18-29.

average boy will leave the high English school with a better intellectual training than at present and with a more thorough knowledge of English, though possibly a less extensive vocabulary; and that in the two years of the intermediate course he will find himself very greatly in advance, both in writing and speaking English, of the average student who now passes an intermediate examination. We also feel the vital importance of continuing the study of the mother tongue at the intermediate stage.[1] But in view of the present condition of Muslim opinion, we should not raise any objection to Bengali-speaking Muslim students devoting to Urdu at that stage the time devoted by other students to Bengali, provided that this was not compulsory.[2]

26. *Suggested parallel institutions.*—A number of witnesses, Hindu, Muslim and European, have urged the establishment of parallel institutions, or of parallel classes in the same institution, the one set using English, the other the vernacular (Bengali or Urdu) as the principal medium.[3] But we do not think a case for such an organisation has been made out. If, as public opinion demands, English is to be a compulsory second language throughout higher secondary education above the level of the middle school, there would be little room for the new set of institutions side by side with the ordinary high schools in our scheme, since the only difference between the two would consist in the employment of English for teaching mathematics in the one set and of the vernacular for teaching mathematics in the other. Mr. Pramathanath Chatterjee, of whose elaborate plan for parallel institutions we have quoted details in Chapter XVIII,[4] belongs to the small minority who would have English not as a compulsory but an optional second language; but he tells us at the same time that there is a growing demand for English and that even if it is optional a large majority of pupils, if not all, will learn English as a second language and will be able to employ it for all ordinary purposes.

27. *Technical terms in Bengali.*—The question of technical terms has been discussed by a number of witnesses. Owing to

[1] Chapter XXXII, para. 21.

[2] A student who avails himself of this concession could not of course simultaneously take Urdu in lieu of a classical language (see Chapter XXXII, para. 27).

[3] Chapter XVIII, paras. 61 and 70-71.

[4] Para. 61.

its powers of word-formation and vocabulary Sanskrit is the natural source of technical terms for Bengali; and Arabic plays the same part for Urdu. The Musalman deputation whom we received in Calcutta, in pressing their objection to the use of Bengali as the medium in the higher classes of the schools, suggested that the technical terms in Bengali must necessarily be framed after the rules of the Sanskrit conjugation and that it was idle to assert that the technical terms would be English.[1] But Sir Gooroo Dass Banerjee, apart from any such controversial question, urges strongly the desirability of using English technical terms in Bengali text-books; while another witness, Rai Dinanath Bisvas Bahadur, suggests that in science primers scientific terms in both English and the vernacular should be used. We think that in regard to the feasibility of using English technical terms in Bengali the authority of Sir Gooroo Dass may be unquestionably accepted. And we suspect that at the root of the objections to which we refer there lies the old fallacy that in order to understand fully the meaning of a word we must know its etymology. Of no group of words is this less true than of technical terms of which the precise meaning can only be understood either by exact definition with the help of more familiar ideas; or, more easily, where this is possible, by their direct application to the objects or actions which they denote. In English, the majority of technical terms, as the Calcutta Musalman deputation point out, are derived from Latin or Greek; but the majority of English school boys study neither language.

The word 'telescope' is used correctly by many sailors who are entirely ignorant of its Greek derivation; and the correct usage of such words as 'garage,' 'volplane' and 'camouflage,' recently introduced into English from the French, does not pre-suppose or require the slightest knowledge of that language. We think that all that is required in regard to the use of technical terms in the Bengali medium is some definite agreement. The objections to borrowing from a foreign tongue not related to the vernacular were met long since by Sir Charles Trevelyan who pointed out that the Sanskritic dialects borrowed habitually from Arabic[2]; and we endorse the suggestion of Sir Gooroo Dass Banerjee that technical terms should be transferred as nearly as possible from English to the

[1] Chapter XVIII, para. 63.

[2] *Ibid*, para. 9.

vernaculars. We feel sure that the question of the declension of nouns and adjectives, and of the conjugation of verbs so introduced, and of the formation from these words of the necessary derivatives and compounds, will not present insuperable difficulties; and that with the assistance of a body like the Bangiya Sahitya Parisad the difficulties could be solved. Our proposal applies only to books used in school by boys who will later have to use the English technical terms in the University and for whom a double set of technical terms would be an unnecessary burden.

II.—The teaching of English.

28. Like the Commission of 1902 we feel that, apart from the question of medium, the English teaching in the schools greatly needs to be strengthened.[1] We know of no subject in any school which is taught for 12 hours a week and to which another 14 hours home-work are on the average devoted (to say nothing of the tutorial assistance, so frequently given) which yields such inadequate results as the teaching of English in the schools of Bengal. We have in Section VIII of Chapter XVIII[2] analysed the various and useful suggestions for reform that have been made, and we do not propose to discuss those questions here in any detail; the primary and fundamental need is for teachers adequately trained and adequately paid.

29. Into the question of secondary school finance we cannot enter here, but in Chapter XLIII we shall discuss the general aspects of training.[3] The future of the teaching of English in secondary schools will depend largely on the output of the training departments of the Universities of Calcutta and Dacca. In the case of Indian teachers we think there is much to be said for entrusting the teaching of both English and the mother tongue to the same persons, as this would probably ensure better teaching of both languages. When European or Anglo-Indian teachers are employed to teach English in schools or intermediate colleges, it would be desirable that they should have or acquire a knowledge of Bengali

[1] Report of Universities Commission of 1902, para. 83, quoted in Chapter XVIII, para. 18 above.

[2] Paras. 100-113.

[3] The evidence of a number of witnesses in regard to the need for training teachers in English is referred to in Chapter XVIII, paras. 102-104.

adequate at least to enable them to compare the structure of the two languages.[1]

30. *The pronunciation of English.*—Our attention has been repeatedly drawn to the defective pronunciation of English by the average student and his difficulty at the matriculation stage of understanding English as spoken by Englishmen. The Commission of 1902 reported in emphatic terms on these deficiencies[2]; but the condition of affairs does not seem to have improved in any marked degree since the date of their report. We have in Calcutta heard teaching of an English class in the junior class of a secondary school in which we were unable to understand a single word that passed between the teacher and the taught. That case is no doubt exceptional; but we have found it by no means infrequent for a matriculate to be unable to understand English as spoken by an Englishman. The teaching of spoken English is not only a matter of the pronunciation of single sounds or single words; the pupil must learn the cadence of spoken English in the sentence and in the period, so essential for the full appreciation of the great master-pieces of English literature in prose and verse. We heard at one lecture on Shakespeare the monologue of the gate scene in Macbeth read so naturally and dramatically by a Bengali lecturer that the whole attention of the class was kindled; but in many cases the recital of prose and poetry in the English class room by the teacher, with a monotonous cadence remote from the English tradition, serves to deprive the text of half its life and interest.

31. Since 1902 great advances have been made in the study of phonetics and in practical methods of teaching pronunciation based on these advances. The teacher of phonetics should occupy an important place in the training departments of both Calcutta and Dacca; and the teachers of English in the intermediate colleges should have a knowledge of the new methods. By means of vacation-courses the existing teachers in the secondary schools might also be brought under the influence of these methods. We believe that in this way a very radical improvement might be effected in the course of a few years. The contrast between the schools of Madras and those of Bengal in respect of English

[1] See evidence of Dr. Gilbert Slater.

[2] See Report of Universities Commission of 1902, para. 83, quoted in Chapter XVIII, para. 18.

pronunciation is said to be strikingly to the advantage of the former.[1]

We have discussed in Chapter XL[2] the proposals of the Calcutta University for the institution of diplomas in spoken English and have made certain suggestions. We hope that it may be possible to institute a *viva-voce* examination in English as part of the future entrance examinations for the universities (the intermediate college examination), as well as of the higher examinations in English.

32. *Distinction between practical training in English and the study of English literature.*—There is a strong body of opinion in favour of distinguishing in the teaching between practical training in English and the study of English literature[3]; Mr. S. G. Dunn, Professor of English Literature at Allahabad, thinks that the English courses have been 'futile' because of the failure to recognise the distinction. Some important witnesses lay stress, and rightly so, on the need for adequate practical training in English; they think the claims of this training have been sacrificed in the past to the study of literature and they would limit all compulsory English training, both in school and college, to the practical side.[4] But Mr. R. P. Paranjpye, of Poona, expresses a view shared to a greater or less extent by many when he urges that the present advance of India is due to the study of English literature and of the ideals it embodies by Indians, and that nothing should be done to cut away the sources of those ideals.

We think that by certain reforms in teaching and in methods of examination the fundamental aims of both parties should be realisable.

33. On the one hand, each candidate should be required, by much more drastic and thorough methods than at present, to show evidence in the examination room (1) of his power of expressing himself in clear and fairly correct English, (2) of his power of understanding modern English (*e.g.*, by the analysis and criticism of a

[1] In a Madras secondary school we found more than a dozen boys selected at hazard in a pre-matriculation class able to read 'unseen' English verse, with excellent cadence and pronunciation.

[2] Para. 2.

[3] Chapter XVIII, Section IX, paras. 114-118.

[4] See the evidence of the three professors of chemistry in the Presidency College, quoted in Chapter XVIII, para. 115.

piece of unseen prose, or by the comparison of two such pieces), (3) of his power of speaking English intelligibly and of understanding spoken English.[1] On the other hand, it should be recognised that, however much we may desire it, inspiration by ideals set forth even in immortal and glowing words is something which the examination room cannot test at all; nor can it be mechanically imposed on any individual student. Even with the most admirable teaching, only a portion of the seed sown by the real teacher of literature will be fruitful; and the attempt by examination methods to ensure that no seed shall be lost produces the tasteless straw of miscellaneous notes, rather than the grain of sympathy, emotion and understanding. The utmost that we can do effectively in this direction is to give the opportunity of inspiration to the pupils by providing them with good teachers and good books. Mr. T. O. D. Dunn is, we think, on right lines when he suggests that "in the schools a skilful choice of reading material may enable 'literature' to be introduced; but its study will be, as it were, unconscious." Such teaching is not of the kind that can be embodied in a syllabus.

34. *The reading of English.*—But in dealing both with the reading and understanding of English, and the writing of English, there are obstacles of detail which must be overcome. We shall consider first the question of the reading of English.

The primary obstacle in the way of dealing satisfactorily with some of those great English writers of whom a knowledge is regarded as essential by the majority of the cultured Indian public is that they are archaic, and that much of their context is unfamiliar to those born in the East. But in the colleges, from the praiseworthy desire that no difficulty shall be left unexplained, the study of Shakespeare and Milton is reduced to a deadly and uninspiring study of difficulties—a study regarded by some experienced teachers of English like Mr. Cuthbertson Jones of Agra as sheer waste of precious time for the average student. We agree very largely with Mr. Jones; but we suggest that with literature, as with the natural process of language, comprehension might be allowed to come by stages, and that a 'rapid reading' of some of the great masterpieces of the 17th century, with attention directed to their main features rather than to their minutiæ might be profitable—far more profitable

[1] Chapters XVII, paras. 46-47, and XL, para. 2.

than the present studies. The method of rapid reading is applicable even more easily to later literature, because the difficulties of detail diminish as we approach our own times. But we desire to say explicitly that we hold no brief for the slipshod or the inaccurate; and in dealing with ordinary modern English prose we think complete understanding should be required.

35. Of all the classical texts suitable for training Indian boys in English there is none comparable with the English Bible. It is one of the main foundations of modern English. Its appeal is universal. Much of it could be read without notes or with a minimum of notes, if well-chosen selections were made for Indian schools and colleges. We are glad to learn that several volumes of such selections are already available.

36. We have summarised the opinions of witnesses on the vexed question of prescribed texts.[1] The prescription of such texts is a matter in regard to which, as we suggest elsewhere, further experiment is required. But we think it desirable that by a well arranged selection of extracts from typical authors the Indian boy should gain some idea of the varieties of English style. If each piece or series of pieces of a given author were prefaced by a brief account in a few lines of the author and of his principal works, and an indication of the place of the extract in the work from which it is taken, the pupils would gradually obtain an idea of the great landmarks of English literature, without formal lectures on the history of the subject, and the intelligent boys would go elsewhere for further information.[2]

37. Nothing during our visits to the colleges has impressed us more strongly than the paucity of books on the shelves of the Bengali student, and the fact that such books consist mainly of text-books, and of very fully annotated texts. English dictionaries and encyclopaedias were in most cases conspicuous by their absence. The present ideal in the mind of the average student is that he should be taught all that he has to learn, or given the books in which the information is all pre-digested for his assimilation. It might be suggested that the average Indian student is too poor to buy as

[1] Chapter XVIII. paras. 109-111.

[2] The *Recueil de morceaux choisis* is regarded as indispensable in all French secondary schools, but we believe that latitude is given to the schools to choose their own book of selections, and hence it would be difficult for it to be used as a 'set-book' for examination purposes.

many books as an average English student. That is certainly and unfortunately true. But the average Indian student uses the college library at his disposal not more but less than the average English student; and uses it very largely for the purposes of novel-reading in Bengali, a taste with which we should not in the least reproach him if it were accompanied by a greater intellectual curiosity in his serious work in English literature as well as in other subjects. Every boy and student should be trained in the use of the dictionary and the encyclopaedia; and he should if possible be induced to purchase cheap examples of such works for himself at the cost of a few rupees, if he cannot afford more expensive ones. They appear to us as a necessary part of the student's equipment.

38. Maulvi Tassadduq Ahmed and Mr. Barrow urge the importance of light reading out of school hours.[1] We would suggest that in order to meet the very real needs of poor students the University might issue a series of books (without notes, or with very few) published at a few annas each, not intended for university examinations but for self-teaching of English, and of other things, the price being fixed at the number of annas necessary to pay the bare cost of publication. We hope that each student might buy a number of such books. Possibly such a series might even be subsidised. The copyright of many of the masterpieces of English fiction, books of travel, and history is now exhausted; and possibly English publishers would be willing to make easy terms in respect of existing copyrights if the sale of such a series were strictly limited to university students and not more than one copy were purchasable by any individual. We believe that such a series, if well selected, so as to offer attractive and varied reading to students, would be more effective in training them in the mastery and knowledge of the English language and of western ideas than many hundreds of the formal lectures on English literature of the kind now in vogue. The series might include not only original English texts but adequate translations of a certain number of books from foreign languages, ancient and modern.

39. We have commented more than once on the unsatisfactory method of explaining texts now adopted in the university class rooms. In our view, no such explanations can be satisfactory

[1] Chapter XVIII, para. 111.

unless the members of the class take an active part in them. While the teacher should not be precluded from giving such elucidations as seem to him necessary, they ought not as a rule to constitute a formal and continuous lecture in which the part of the students is restricted to taking notes. The students should, on the contrary, be asked to study the text before the class is held in order to prepare themselves for its discussion; and they ought to be both permitted and encouraged to ask questions on points of difficulty that they have attempted but been unable to solve.

40. *The writing of English.*—The problems of the writing of English are too complex to be discussed in any detail here. We shall only touch on one or two points that seem of special importance in Indian class-rooms and examinations. In testing the practical knowledge of English both in the class-room and the examination room we suggest that the literary aspect of the subject should not be put in the foreground, and that the tests should deal mainly with problems of the kind that arise in real life or with the analysis of material that has been furnished to the student or that he can collect in a library. The ordinary 'essay' is apt to deal with topics so lofty that not one sensible person in a hundred would feel that he had anything of his own to say about them; and to be written as if it were intended for the whole world of letters. A student or a school boy will write much more forcibly and much more sensibly if he is asked to write on matters on which he is more entitled to form an opinion and for an audience more modest in size and character. The average person does not in daily life need to write on lofty topics for the world at large; he writes for his parents or relations or his friends, for his official superiors or inferiors, or for a particular body of people who require information or guidance on a special point. The whole construction and style of what he writes are, or ought to be, determined not only by his subject in the abstract, but by the previous knowledge and state of mind of his audience, real or presumed. The grotesqueness of what is called Babu-English is due not only to the very natural use of archaisms by persons who have been made familiar with the classics of the 16th and 17th centuries, in prose and verse, before they have mastered the English prose of the nineteenth century; but largely to the fact that their teachers have not recognised that every composition (except perhaps a lyric poem or its analogue in prose)

is consciously or unconsciously addressed to a definite audience, and that its style has been adapted more or less successfully to meet the needs of that audience. What is suitable in writing for one kind of audience is ridiculous in writing for another. With more rational methods of teaching and examination, Babu-English would soon become a thing of the past. By that we do not mean that the English of the Indian would necessarily be indistinguishable from that of the English-born citizen. But it would be by special qualities and characteristics that it would be distinguishable, as Professor Seal suggests—and he is himself an admirable example of his theories—not by incongruities and faults.

41. Our attention has been directed to the point that 'essays' are frequently learnt by heart for examination purposes. Such subjects as 'a river scene,' 'a sunset,' or 'a railway station' lend themselves to this form of treatment. But by the exercise of some trouble and ingenuity it is possible to avoid vague and hackneyed subjects of this kind.[1] It may be said that the learning of 'essays' by heart is not wholly unprofitable since it gives a certain knowledge of English; but if English is to be learnt by heart, it is better to choose passages for exercises of this kind from the modern classics rather than from the authors of Calcutta 'keys.'

42. *University training in English.*—The question treated in the foregoing paragraphs overlaps the question whether English teaching should be provided for all students during their university course.[2] We think that when the new intermediate college system is working this ought certainly not to be necessary; and that meanwhile the Universities of Calcutta and Dacca should take such action as seems to them necessary for the actual needs of individual students. We do not recommend that a uniform examination in English literature should be compulsory for all students, even in the Faculty of Arts. But we should like to see opportunities given to all students to attend such courses in English, which would of course be compulsory for students taking English literature as a subject at their examinations. Under the tutorial system which we recommend much of the practical training in English will be given not by teachers of English literature but by the teachers of other subjects, to whom the students will show written work

[1] *Cf.* Chapters XVII, paras. 52-63.

[2] See Chapter XVIII, Section X, paras. 119-127.

regularly for criticism.[1] We welcome the suggestion of a number of witnesses that in the Faculty of Science the students should be required to read books dealing with the history of the subject, of which the English covers a wider range than the ordinary text-book. Although it is not strictly relevant here, we may point out that a knowledge of scientific history and method is becoming more and more largely recognised as an essential part of scientific education.[2] Finally in dealing with non-literary students it should, we think, be specially borne in mind that a knowledge of English is, to quote Mr. Anandakrishna Sinha, "not an end in itself but only a means to some higher end."

III.—Conclusion.

43. To sum up: We advocate (1) more attention to the rational teaching of the mother tongue as a method of mind-training; (2) (*a*) reduction of the use of English as a medium of instruction up to the present matriculation stage; and (*b*) its retention as a medium above that stage; (3) the adoption of improved methods of teaching English and the introduction of more highly-trained teachers of English both in the secondary schools and the intermediate colleges; (4) more drastic tests for all of a practical knowledge of English; and (5) an abandonment of the system of examining non-literary students in the difficulties of classical texts.

Our general aim is to make the educated classes of Bengal bilingual. But, like our predecessors, we lay stress on the continued necessity of improving the vernaculars, through which the results of western as well as of eastern knowledge can alone be conveyed to the masses of the people.

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[1] We have discussed other matters relating to the teaching of English in Chapter XXXIII, para. 77, and in Chapter XXXIV, paras. 44-47.

[2] See, for instance, *Natural Science in Education* (1918), the Report of Sir J. J. Thomson's Committee on the Position of Natural Science in the Educational System of Great Britain, para. 75, *ad. fin.*

CHAPTER XLII.

Oriental Studies.

I.—Introduction.

1. In Chapter XVI we have outlined the history of the development of oriental studies in the Presidency of Bengal. In the present chapter, we shall set out our recommendations on this department, and, as before, we shall discuss the subject in two broad divisions, namely, Sanskritic and other non-Islamic studies and Islamic studies. The problems which require solution are of the same type though not identical in scope, and the schemes for reorganisation which we shall propose are marked by a general similarity of plan, though the details are necessarily different.

II.—Sanskritic studies and the vernacular.

2. As regards Sanskritic studies, a question of considerable difficulty arises in respect of the future position of the Sanskrit College. We have explained that the institution known as the Sanskrit College consists of three departments, (*i*) the Anglo-Sanskrit School, (*ii*) the Anglo-Sanskrit College and (*iii*) the *tôl*. Although the avowed purpose of the three departments is to impart instruction to candidates for the matriculation examination, the intermediate and B.A. examinations, and the *tôl* examinations, respectively, the common feature which characterises all the departments is the intensive cultivation of Sanskrit learning in its diverse phases. This object is achieved by the employment of highly qualified specialists and by the maintenance of a special library of printed books and manuscripts. The institution, in substance, aims primarily at a unified pursuit of Sanskrit studies from the lowest to the highest grades, both according to eastern and western methods, although incidentally it prepares candidates for university examinations. Indeed, this latter may be regarded almost as a secondary purpose. The University, when reconstituted according to our plan, will no longer supervise instruction for the matriculation and intermediate standards; nor can the University,

for reasons already indicated, take upon itself the task of the control and development of indigenous learning in the college, much less in the academies flourishing in various parts of the Presidency. We think, therefore, that the college could not as a whole form part of the University either as an 'incorporated' or as a 'constituent' college. At the same time, the break up of the institution into three disconnected fragments, namely, a high school teaching up to the intermediate standard, a degree college, and a *tôl*, would be likely to interfere seriously with the unity of purpose which now pervades its activities as a whole. The position is one of great difficulty, yet a solution seems possible. The institution might, we think, be transformed into three distinct departments (*i*) a secondary school and intermediate college, (*ii*) an undergraduate college, and (*iii*) a *tôl*. The first of these may be placed under the Board of Secondary and Intermediate Education. The second may well become a constituent college of the University. The third should be maintained as a model *tôl* under the Calcutta Sanskrit Association. But even if the institution were so organised, the governing bodies for the three sections could be so constituted as to include a predominating element of common members; a feature which we regard as vitally necessary to secure uniformity of purpose in the three departments. It is further essential that the three departments should be located in the same or in adjacent buildings. The library, consisting of printed books and manuscripts, which have been elaborately catalogued, could not possibly be duplicated or triplicated and must be retained entirely for the use of all the three departments. The staff of experts also could not conveniently be so distributed as to give to each section a complete self-contained set of teachers. The arrangement suggested will be feasible, if a new building is erected in place of the existing structure. Proposals for the reconstruction of the entire range of buildings in which the Hindu school and the three departments of the Sanskrit College are held have been under consideration for some years; though no decision has yet been arrived at. The question of accommodation, however, is of great urgency, as we realised on the occasion of our visit to this institution and as has been repeatedly pointed out in the annual reports of the University Inspector of Colleges. If the three departments are located in a building or buildings suitably constructed and conveniently situated; if the library is so arranged

as to be accessible to students and teachers of every department; and if the several governing bodies have a strong common element calculated to promote harmony of purpose and work, we do not see any insuperable practical objection to our suggestions. If any technical difficulties of administration arise, the entire institution might be vested in trustees and managed in the method we have proposed for the Presidency College.[1]

3. The fundamental idea which lies at the root of our proposals is the retention of the characteristic of the institution as a great seat of Brahminical learning, so reconstituted as to fit in with the general reconstruction of the educational machinery in the Presidency. It would, in our opinion, be a distinct loss if the so called school department and the intermediate classes, when placed under the Board of Secondary and Intermediate Education, were to lose their character as a great centre for the special study of Sanskrit. What we consider a grave defect in the present condition of secondary schools and intermediate colleges is their dull uniformity, their lifeless conformity to a type solely intended to give instruction to candidates preparing for the matriculation and intermediate examinations. We are convinced that this is not in the best interests of education, and that diversity of pattern and freedom of development are essential for the growth of schools which may effectively meet the varied and changing needs of the community. The high schools and intermediate colleges which, under the system outlined by us, will arise from a reconstitution of the existing institutions or will spring into existence as new places of instruction, will, we hope, be of various types; some may have a special agricultural side; others, again, may develope in the direction of technical training. Amongst institutions of this type, we are anxious to see one at least which will specialise in orthodox Brahminical learning; and the Sanskrit College obviously furnishes a valuable nucleus for that purpose. The section of the college which will become a constituent college of the University may well be developed into a vigorous institution for Sanskrit studies, just in the same way as we desire to see a Muslim college established for the promotion of Islamic studies. The university chairs in Sanskrit and Sanskritic subjects may fittingly be attached to the Sanskrit College so reconstituted.

[1] Chapter XXXIV.

Finally, the *tôl* department will, we hope, continue to flourish exclusively as an academy for orthodox studies under the guidance and fostering care of the Calcutta Sanskrit Association.

4. In our review of the progress of oriental studies we have laid stress on one fact of fundamental importance, namely, that Sanskrit learning has hitherto developed in two distinct and diverging lines, one leading to the Anglo-Sanskrit system pursued in the affiliated colleges of the University, the other belonging to the indigenous system prevalent in the *tôls* or Sanskrit academies interspersed throughout the province. We have further pointed out that both systems attract young men in considerable numbers, for though the aspirants for Sanskrit titles are relatively few, in comparison with the vast crowd which seeks admission into the University, they still represent a substantial and an influential section of the community. There can further be no question that these scholars, steeped in eastern learning, count among them men of unquestioned ability whose usefulness to society might be enhanced if they could be brought into touch with the methods and aims of western learning, especially in their own departments. The problem is by no means free from difficulty and a definitive solution cannot be attempted on the materials at our disposal. Upon one point, however, there is no room for controversy. The University of Calcutta, as proposed to be reconstituted, cannot possibly undertake the control and direction of Sanskritic learning as cultivated on strictly indigenous and orthodox lines. The management of studies so pursued must, for obvious reasons, be placed substantially in the hands of the great scholars who devote their lives to their successful pursuit; but however eminent their attainments, they cannot appreciate the requirements of western learning. However acute their intelligence and profound their learning, the presence of such scholars on the academic bodies of the University would be likely to lead to friction, dispute and endless controversies. Interference with their work by scholars saturated with western learning and ideals would be deeply resented by them, just as their intervention in discussions of university studies on the western pattern would be resented by votaries of the latter. We are convinced that it would at present be an unwise step to force the two paths to converge and meet. But what does seem practicable is that a bridge may be constructed which may afford a passage for those

who have reached a certain stage in one of these high-ways to pass on to the other track. We may here indicate one possible method of passage from the indigenous to the western side. Let us assume that those who have passed the title examination of the Sanskrit Association have given sufficient evidence of intellectual attainments to justify their admission into the new University; in other words let us regard them on the same level as those who pass the intermediate examination. We may institute for the benefit of such persons a special degree or degrees or a special diploma or diplomas to be awarded on the results of an examination or examinations conducted partly in English, partly in Sanskrit, and possibly also partly in a vernacular. The subjects and courses prescribed for the diplomas or degrees should be studied according to modern critical methods, and with reference to the results of modern researches, and the examination should be so conducted as to ensure that every successful candidate has a competent knowledge of English. Again, if it is felt that the possession of the Sanskrit title indicates depth of culture secured at the undue sacrifice of breadth, the courses may well be so framed as to demand varied knowledge on the part of the students. But it is essential that Sanskrit title-holders who aspire to a university degree or diploma under such conditions should be trained in an institution of university rank, and for this purpose the Sanskrit College as a constituent college of the University must be so developed as fully to meet the needs of the situation likely to arise under new conditions. This points to the conclusion that the reorganisation must not mean the disruption of what now constitutes the Anglo-Sanskrit and the *tôl* departments; it is the more ambitious students of the *tôl* department who will ultimately pass on to the constituent college and seek instruction for the university degree or diploma; and, conversely, some of the students of the constituent college who have specialised in Sanskrit for an honours degree, or for the M.A. degree, may well seek training in the *tôl* department for the purposes of the title examination. Consequently though the institution will be subdivided into three sections under the guidance and control of three distinct authorities, namely, the Secondary and Intermediate Board, the University, and the Sanskrit Association, these departments must all be animated by a common purpose to afford ample facilities to students of all types for the cultivation of Sanskrit learning in

a variety of phases, both according to eastern and western methods.

5. The next question which demands attention is the development of research work in orientalia in the University of Calcutta. A valuable memorandum on the subject has been submitted to the Commission by Mr. D. R. Bhandarkar, Carmichael Professor of Ancient Indian History and Culture.[1] We are of opinion that although considerable progress has been made in this direction in recent years, the facilities for research in Indian history and culture are by no means adequate. In 1911, a conference of orientalists met at Simla on the invitation of the Government of India and recommended that an oriental research institute should be founded somewhat on the lines of the schools at Hanoi and Vadivostock. It appears to have been assumed at that time that Calcutta would be the proper place for such a central institute, not merely because it was then the seat of the Government of India, but also because in the University, the Indian Museum, the Asiatic Society of Bengal, the Sanskrit College and the Imperial Library were to be found in abundance materials needed to make such an institution a success. Since the transference of the capital to Delhi, however, the idea appears to have found favour that such an institution, if founded, should be established at Delhi; but, by reason of the financial difficulties due to the war, the scheme has not made substantial progress. It is not necessary for our present purpose to discuss the somewhat delicate question whether, as a matter of Imperial policy, Delhi should or should not possess such an institute. Apart from this, it is plain that Calcutta, in connexion with its University, needs ample facilities for the cultivation of oriental studies. We have just mentioned the rich materials, many of them of unique value and importance, to be found in the many public institutions in Calcutta. Mr. Bhandarkar urges with considerable force that, for the adequate exploration of these materials, it is necessary that a competent staff should be placed at the disposal of the University and he suggests the creation of chairs for subjects like ancient Indian history and culture, Indian philosophy and religion, Vedic language, literature and culture, Pali language, literature and culture and Indian anthropology. The list is plainly not exhaustive. Indian archæology furnishes an

[1] General Memoranda, page 349.

endless field of study and specimens of inestimable value are located in the galleries of the Indian Museum. On the other hand, the art gallery of the same institution contains abundant materials for the study of the Indian fine arts. A happy augury of what may be achieved in the way of co-operation in this line is furnished by the fact that Mr. Bhandarkar, the Carmichael Professor in the University, is also the officer in charge of the archæological collections in the Indian Museum and is thus able to afford every facility to university lecturers and students who desire to work in the latter institution. We consider it highly desirable that chairs, readerships and lecturerships should be established in the various subjects comprised in 'Ancient Indian History and Culture,' and adequate provision should be made for the study of correlated and subsidiary branches of knowledge.[1] It is further essential that stipends and scholarships should be available for deserving students in these departments.

6. The claims of another domain of knowledge for exploration by a well organised department in an oriental university, have been pressed on our attention by some of our correspondents.[2] Notwithstanding the introduction of the western system of medicine, the ancient indigenous systems continue to exercise considerable influence over the people at large, and large masses of the population have recourse to what is known as the Ayurvedic system amongst the Hindus and Unani system amongst the Musalmans. It is not necessary for our present purpose to consider how far either of these systems is founded on a true scientific basis, for it is plainly desirable that systems which have in the past deeply affected the life of important communities, and still exercise immense influence upon them, should form the subject of historical study and scientific investigation, especially as competent scholars are likely to be available for this purpose. Sir P. C. Ray, who has devoted a lifetime to the study of chemistry, has produced a work on the history of the Hindu

[1] The importance of the study of Tibetan has been emphasised in Chapter XVI, para. 24; to secure the co-operation of learned Lamas in Tibetan studies it would be desirable to arrange for the accommodation of university teachers and students during a part of the year in a place like Darjeeling or Ghoom.

[2] Memorandum by Ayurvedic doctors of Calcutta; General Memoranda, page 194. Memorandum by Hakim Masihur Rahman on the Tibb or Unani system; General Memoranda, page 195.

system of chemistry which has met with unstinted praise from competent scholars. Dr. Girindranath Mukherji was some years ago awarded by the University a research prize for his investigations on the surgical instruments of the ancient Hindus, who had, it seems, made, in quite early times, progress which would have been deemed considerable in Europe towards the end of the eighteenth century.

7. That the entire system of indigenous medicine, as practised in India affords a fruitful field of study and investigation, is indeed clear from the testimony of many competent authorities. Dr. Hoernle, in the preface to his studies in the medicine of ancient India, observes :—

"Probably it will come as a surprise to many, as it did to myself, to discover the amount of anatomical knowledge which is disclosed in the works of the earliest medical writers of India. Its extent and accuracy are surprising, when we allow for their early age, probably the sixth century before Christ, and their peculiar methods of definition. In these circumstances, the interesting question of the relation of the medicine of the Indian to that of the Greeks naturally suggests itself. The possibility at least of a dependence of either on the other cannot well be denied when we know as a historical fact that two Greek physicians, Ktesis about 400 B.C. and Megasthenes about 300 B.C., visited or resided in Northern India."

Dr. Neuberger in his history of medicine[1] writes :—

"That Greek medicine adopted Indian medicaments and methods is evident from the literature. The contact between the two civilisations first became intimate through the march of Alexander and continued unbroken through the reign of the Diadochi and the Roman and Byzantine eras. Alexandria, Syria and Persia were the principal centres of intercourse. Indian physicians' means and methods of healing are frequently mentioned by Greco-Roman and Byzantine authors as well as many diseases, endemic in India but previously unknown. During the rule of the Abbasides, the Indian physicians attained still greater repute in Persia, whereby Indian medicine became engrafted upon the Arabic, an effect which was hardly increased by the Arabic dominion over India. Indian influence in the guise of Arabic medicine was felt anew in the West. The apparently spontaneous appearance in Sicily in the 15th century of rhino-plastic surgery bespeaks a long period of Indo-Arabian influence. The plastic surgery of the 19th century was stimulated by the example of Indian methods ; the first occasion being the news derived from India that a man of the brick-makers' caste, had, by means of a flap from the skin of the forehead, fashioned a substitute for the nose of a native."

8. Similar testimony is furnished from a very different quarter. The late Surgeon-General Sir Pardey Lukis, sometime Principal

[1] Volume I, page 60.

of the Medical College, Calcutta, and later Director-General of the Indian Medical Service, said in the course of one of his public utterances :—

"I wish to impress upon you most strongly that you should not run away with the idea that everything that is good in the way of medicine is contained within the ringed fence of allopathy or western medicine. The longer I remain in India and the more I see of the country and the people, the more convinced I am that many of the empirical methods of treatment adopted by the Vaids and Hakims are of the greatest value, and there is no doubt whatever that their ancestors knew ages ago many things which are nowadays being brought forward as new discoveries. For instance, during the last few years, there has been a considerable amount of talk about what is known as depurating, that is to say, the depriving of the system of salt. This arose from certain experiments carried out by Widal and Javal as a result of which it is recognised that in all cases of dropsy the greatest benefit can be obtained by restricting your patients to an entirely salt-free dietary. There is nothing new in this. This was known thousands of years ago in the East, and any Hakim would have told you long before Widal or Javal made their experiments that salt is contra-indicated in all dropsical affections."

Equally emphatic is the assertion of Dr. Harold Brown, formerly of the Indian Medical Service, that "there are a great many indigenous drugs which are of extreme utility but are little known to the students of western medicine." No arguments are needed to establish the position that a system which is described in these terms by some of the most distinguished exponents of the western system of medicine should be cultivated in an Indian university from the point of view of a historical, critical and scientific student. We do not suggest that, in a university of a modern type, it would be correct to establish degrees and diplomas in ancient systems of medicine with a view to authorise the recipients to undertake the practice of their profession. But we maintain that these systems of medicine deserve careful investigation in an Indian university from the point of view already indicated. The result of such a study would be to throw light on their origin and growth, the true basis of their structure and development. If adequate provision is made for this purpose in the reconstituted University, it is not unreasonable to hope that the exponents of the indigenous systems of medicine will gradually become linked with students trained according to the most approved western methods. The former will recognise that though their ancient system reached the height of a systematising, theorising school of thought, it lacked the freedom of individual action essential to the pursuit

of real science and its evolution was prematurely arrested by an unscientific veneration for petrified dogmas. The modernists, as we may call them, will, on the other hand, realise that the ancient system possessed an imposing treasure of empirical knowledge and technical achievement which cannot be safely ignored even in these days of rapid progress.[1]

9. Before we pass on to an enumeration of our proposals for the organisation of Islamic studies, it is necessary to deal with a very important topic, *viz.*, the scientific study of the Indian vernaculars. In Chapters XVIII and XLI we have considered the question of the use of the vernacular as the medium of instruction, and have emphasised the elementary truth that the study of a variety of subjects through an imperfectly understood foreign tongue is bound to be a slow, laborious and bewildering process, often leading to unsatisfactory results. We have further laid stress on the principle now generally accepted as the result of accumulated experience, that the superstructure of the successful study of a foreign language is best laid on the foundation of a sound knowledge by the student of his own vernacular. For such study, there is truth, though only part of the truth, in the view expressed by Richter in his Levana that every new language is understood only by comparison and contrast with the one first learnt. The two aspects of the problem we have emphasised prove conclusively the importance of a systematic and scientific study of the vernaculars in a well-ordered Indian university.

10. There is another aspect of the question, however, which is, if possible, of still greater importance, *viz.*, the cultivation of the vernacular languages with a view to the creation of a vernacular literature representative of the genius of the people. The necessity of the study of the vernacular languages of India with a view to the improvement of the vernacular literature has always been recognised by the British administrators of the country. In 1835, the General Committee of Education, Calcutta, observed:—

"We are deeply sensible of the importance of encouraging the cultivation of vernacular languages. We conceive the formation of a vernacular literature to be the ultimate object to which all our efforts must be directed."

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[1] The subject of the Ayurvedic and Unani systems is discussed from another point of view in Chapters XXIII and XLIV.

In the same year, Macaulay wrote in his famous minute :—

" We must at present do our best to form a class who may be interpreters between us and the millions whom we govern.....To that class, we may leave it to refine the vernacular dialects of the country, to enrich those dialects with terms of science, borrowed from the western nomenclature and to render them by degrees fit vehicles for conveying knowledge to the great mass of the population."

Sir Charles Trevelyan said in his work on Education in India :—

" Our main object is to raise up a class of persons who will make the learning of Europe intelligible to the people of Asia in their own language."

These views found expression also in the great despatch of 1854.

" The English language should be taught where there is a demand for it, but such instruction should always be combined with a careful attention to the study of the vernacular language of the district. As the importance of the vernacular languages becomes more appreciated, the vernacular literatures of India will be gradually enriched by translations of European works or by the original compositions of men, whose minds have been imbued with the spirit of European advancement, so that European knowledge may gradually be placed in this manner within the reach of all classes of the people .....The scheme of education (of the affiliated institutions) should provide in the Anglo-Vernacular colleges for a careful cultivation of the vernacular languages ; and in the oriental colleges for sufficient instruction in the English and the vernacular languages, so as to render the studies of each most available for that general diffusion of European knowledge which is the main object of education in India."

11. The policy here laid down is enunciated in perfectly unambiguous terms. That policy is to make English and the Indian vernacular languages co-ordinate factors in working out in India a harmonious combination of eastern and western civilisation. It is a matter for surprise that notwithstanding the generous policy boldly outlined by the Court of Directors, the claims of the vernaculars have not been adequately recognised. Indeed, in the University of Calcutta, where successful attempts have been made only in recent years to encourage the study of vernaculars, their claims have received what cannot but be deemed reluctant recognition. The regulations for the matriculation examination require that every candidate be tested in composition in his vernacular. The duty is laid on the Syndicate to prescribe, on the recommendation of the Board of Studies, a small number of standard works, not exceeding six, to be read as models of style ; but this is coupled with the provision that candidates shall not be asked to answer any questions on the subject-matter of the books

recommended or on the history of vernacular literature. Similar provisions are to be found in the regulations for the intermediate examination. A slight modification is introduced in the regulations for the B.A. examination where the object of the paper on vernacular is described as "a test of composition and of a general knowledge of the subject-matter of the books recommended." The inadequacy of the rules we have mentioned is emphasised by another provision to be found amongst the conditions of study in affiliated colleges, *viz.*, that no lectures need be delivered on vernacular composition. Surely it is not a matter for wonder that under these conditions the study of vernacular is generally neglected by students as well in schools as in colleges. No young man in England would be considered to have received a sound and good education unless he possessed a mastery over his own vernacular, had learnt to avoid grammatical errors and had acquired a taste for the niceties of the idioms of his mother tongue. Again, an English student in a foreign university, can easily take notes, in his own language, of the lectures delivered, say, in French or German. We believe a considerable proportion of Indian students would find a similar attempt to take notes, in their vernacular, of lectures delivered in English, not a pleasant exercise, but a tedious and repulsive trial. We are emphatically of opinion that there is something unsound in a system of education which leaves a young man, at the conclusion of his course, unable to speak or write his own mother tongue fluently and correctly. It is thus beyond controversy that a systematic effort must henceforth be made to promote the serious study of the vernaculars in secondary schools, intermediate colleges and in the University. The elaborate scheme recently adopted by the University for the critical, historical and comparative study of the Indian vernaculars for the M.A. examination is but the coping stone of an edifice of which the base has yet to be placed on a sound foundation, and it is only when such a structure has been completed that Bengal will have a literature worthy of the greatness and civilisation of its people.

III.—Islamic studies.

12. We propose in this section to discuss the co-ordination and future relations of the madrassah system with higher secondary (intermediate college) education and university education. We

have seen in Chapter XVI that madrassah education is divided into four stages, the maktab, or primary stage; the junior madrassah classes, or middle stage; the senior madrassah, or high stage; the title classes, or highest stage. Of these the first two stages fall outside our reference. We have also seen that the madrassahs fall into two categories; the one of which the 'Calcutta Madrassah' is the type and which provides the old orthodox teaching; and the 'reformed madrassahs' which are differentiated from the older type (1) by the compulsory teaching of English up to the standard of the present Calcutta matriculation; (2) by the absence of Persian from the curriculum; (3) by the fact that Arabic and the other subjects instead of being taught according to the old orthodox or 'Dars-e-Nizamia' course are taught on modern lines by means of Arabic and European books. The reformed madrassahs are in effect high schools in which the pupils learn more advanced Arabic language and literature and other Islamic studies in lieu of some of the ordinary subjects of the curriculum. We may add that the Calcutta Madrassah is the only Government madrassah which teaches the Nizamia syllabus and that no aided madrassahs follow that syllabus.[1]

13. The curriculum of the reformed madrassahs was revised in connexion with the scheme for the University of Dacca; the students of those madrassahs who might desire to pursue their studies were to continue them in the university department of Islamic studies at Dacca. We have explained in Chapter XXXIII the chief modification in the scheme which our proposals render necessary, namely, that the classes of the first two years of the Islamic course of the Dacca Committee should be treated like the intermediate courses in other subjects and either carried on as a separate intermediate madrassah, or added on to a 'reformed madrassah.' We have also pointed out that, owing to the delay in establishing the Dacca University, the Bengal Government, as a matter of necessity, has already carried out this part of our scheme by tacking on an additional two years' course to the Dacca Reformed Madrassah. We think that for the sake of discipline it may be desirable to remove the junior classes to another building; but in other respects the new organisation of the Dacca 'inter-

[1] There are four private senior madrassahs teaching the syllabus of the Calcutta Madrassah; three in Bengal—Furfurah, Chittagong and Dacca—and Sessram in Bihar.

mediate madrassah' harmonises with our general scheme. It will correspond exactly to the intermediate college attached to a high school; and it should admit students not only from the 'senior classes' of the Dacca Madrassah, but from other senior madrassahs of the Presidency.

14. We think that an 'intermediate madrassah' might be established on similar lines at Chittagong, the chief town of the district which furnishes the largest number of students to the madrassahs of Bengal; and that to avoid undue concentration, other intermediate madrassahs on these lines should be established, if the need for them should arise.

15. The Dacca University Committee recommended that the 'final examination' (corresponding to the matriculation examination) of the reformed senior madrassahs, now twelve in number, should be conducted by the Islamic Department of the Dacca University. Again, owing to the delay in the establishment of that University, Government has been obliged to take other measures, and the Department of Public Instruction has set up a special board for the conduct of this examination. We have recommended that both the senior madrassah examination and the intermediate madrassah examination should be conducted by a special committee of the Board for Secondary and Intermediate Education, which will conduct the examinations corresponding to the present matriculation and intermediate examinations; and that the Islamic Department of the Dacca University should be strongly represented on this Committee. The relation between the Committee and the Board as a whole would be not unlike the relation of the Department of Islamic Studies to the Faculty of Arts.

16. We have not considered in detail the curriculum either of the reformed senior madrassah, or of the intermediate course of Islamic studies recommended by Mr. Nathan's Committee, but we desire to draw attention to two important points in regard to them. The absolute exclusion of Persian from these courses has been regretted by some who think that, for the sake of those students who wish to develope their linguistic and philological studies, Persian might find a place as an alternative to some of the subjects of the curriculum other than English. Secondly, as we have pointed out in Chapter XXXIII,[1] we should welcome the

[1] Paras. 104 and 105.

inclusion in the intermediate course of more elements of western culture in addition to a sound foundation of Islamic studies. It will be for the Board of Secondary and Intermediate Education to consider this latter suggestion, which will materially affect the relation of the madrassah education to that of the university education to which they will lead.

17. We have recommended in Chapter XXXIII that if and when intermediate courses including a larger western element, such as we have suggested above, are provided they should be followed in the University of Dacca by a course connoting an acquaintance with western as well as with eastern culture, at the conclusion of which the B.A. degree should be conferred. It is the combination of these two cultures that should make the Islamic Department of the Dacca University a unique institution in India. It was the definite object of the Dacca Committee to produce 'ripe Arabic scholars' who would possess in addition a thorough knowledge of English; and they add "we consider that a student thus trained will become a man of culture who should make a good Government officer, or a suitable recruit for the learned professions. The course in English should be the same as that of the pass B.A., whilst the curriculum in Arabic and Islamic subjects should lead gradually to a very high level of attainment."[1] Up to the present there has been no school in India where modern Arabic as it is now spoken has been systematically taught;[2] nor, in spite of the exceptional resources which India possesses in the shape of valuable Islamic manuscripts, and of scholars versed in ancient Islamic learning, has there been any adequate school of research in Islamic studies in this country. The Dacca University will have at the outset to purchase a large collection of books on Islamic subjects printed in India and abroad; but we hope that private benefactors will, both at its initiation and afterwards, come forward and help it to establish a really first rate collection of manuscripts as well as of printed books. The department will, when fully developed, unite the classical and the modern studies of Islam and of its chief literary languages, Arabic and Persian.

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[1] Dacca Report, page 100.

[2] We hope that the Islamic Department may in course of time teach modern Persian as well as modern Arabic. In view of recent developments in Mesopotamia the teaching of both colloquials has acquired additional importance.

18. The University of Dacca will no doubt organise honours as well as pass courses in the department of Islamic studies. The extension of the whole course by a year which we recommend will necessitate some modification and extension of the scheme proposed by Mr. Nathan's Committee. We do not enter into the details of the scheme, but there are two matters to which we desire to direct attention.

19. In the first place we think the school ought to, and will, attract not only scholars from the reformed madrassahs of Bengal but from other provinces of India and from western countries; and that the University should have power by statute to institute special and individual tests for the admission of students who have not passed the examination of the Bengal Board of Secondary and Intermediate Education, but who are able to show otherwise (*e.g.*, by the passing of equivalent examinations in other provinces or countries) *primâ facie* evidence of their fitness to profit by the courses in the Islamic department.

20. We also regard it as essential that the department of Islamic studies should form part of the Faculty of Arts, and that there should be the fullest possible co-operation between that and other departments in the Faculties of Arts and of Science. Students of history should come to the department for the study of Islamic history, and in certain cases to learn Arabic so that they may study original works written in that language. To the student of western mediæval history, the works of contemporary Arabic historians such as Ibn Khalladoon and Tebri will be of great value. And students in the Islamic Department who wish to specialise in such subjects as Islamic history, Islamic philosophy, or Islamic law will find the necessary complement to their studies in the courses on modern and mediæval history, modern philosophy and modern jurisprudence. Similarly the student of Arabic astronomy will find it essential to study modern astronomy and mathematics in conjunction with the Arabic language and Arabic methods of calculation. Owing to the absence of scholars versed in both aspects of the subject, important Arabic works on astronomy such as the Kanoon Masudi have been left unedited up to the present. We hope that courses will be devised including such combinations of eastern and western studies as we have suggested.

21. The students who have gone through a course in the School of Islamic Studies under the scheme above described will be qualified to take their share in the administration of the country, will understand the duties of a citizen, and will be useful to the Empire not only in India but also abroad. They will have general culture, a good command of English, and some of them will also have a working knowledge of spoken Arabic. They will be prepared to undertake work of the same standard as the other graduates of the University. They will be qualified to pursue a commercial or a legal career; and those who subsequently take a law degree will be specially well-qualified in Muslim law. The improvement of the madrassahs has always been a problem both to the Government and the people, and we hope that under the system that we have recommended they will become a fresh source of strength to the country.

22. *The Calcutta Madrassah.*—We now turn to the Calcutta Madrassah, which for nearly a century and a half has served as the pivot of Muslim education in Bengal. The Calcutta Madrassah comprises two departments which are organised on distinct lines: (1) the Anglo-Persian Department, which is an ordinary high school in which Urdu is taken as the principal vernacular, and in which, as in other schools, English is the medium of instruction in the four highest classes; (2) the Arabic Department. This latter department is divided into three stages:—

(*a*) the junior, or primary and middle stage,
(*b*) the senior, or high and higher secondary stage,[1]
(*c*) the 'title' stage.

23. There is much evidence in support of the proposal to connect the Calcutta Madrassah with the reconstituted University of Calcutta. Mr. A. H. Harley, the Principal of the Madrassah, suggests that in view of the similarity of the senior certificate course of that institution to that of the Maulvi Fazil examination of the Punjab University (which is regarded as

[1] We may point out that, on the recommendation of Sir Archdale Earle, the Government of Bengal generally approved a proposal that Calcutta Madrassah students who had passed the senior madrassah examination and who had taken English throughout their training from the proposed fourth year class of the Junior Department upwards and who had passed an examination in English at a further two years' course should be considered by Government as equivalent to men who have taken a university degree (see Chapter XVI, para 61).

equivalent to the B.A. degree) and the superiority of the Calcutta Madrassah title course,[1] it is reasonable to request that students of oriental languages and religion in this province should be granted privileges not inferior to those of their co-religionists in the Punjab.[2]

Shams-ul-Ulama Maulvi Vilayat Hussain would like provision to be made in the Calcutta University for the madrassah students, so that they may be examined by the University on their courses of studies, and after passing the examination, may be given some diploma or title.[2] The Muslim gentlemen of Calcutta to whom reference has already been made in Chapter XVI, paragraph 99, urge that the time has now come for the University of Calcutta to take these students of oriental languages and learning under its protecting fold, as the sister University in the Punjab has already done.

24. Shams-ul-Ulama Mufti Muhammad Abdullah makes the following proposals[3]:—

(*i*) That the University of Calcutta may be pleased to take the Arabic Department of the Calcutta Madrassah under its protection and patronage and establish faculties of oriental learning in Persian and Arabic on the lines prescribed for this institution, the syllabus of which even in its present condition is superior to that of the oriental faculties of Persian or Arabic as provided in the Punjab University.

(*ii*) And that the students of the oriental faculties in Persian and Arabic as studied in the Calcutta Madrassah may be permitted to present themselves for examination in the English papers of the matriculation, intermediate and the B.A. examination in the Arts Faculty of the Calcutta University, successively, and, in case of securing pass marks only in English, may be deemed to have passed in the particular examination for which they have presented themselves.

25. We do not feel able to accept the proposal that the Calcutta University should follow the precedent set by the Punjab University for several reasons; first, because, as we have explained above, we think the B.A. should connote not only a knowledge of English but a knowledge of the methods of western criticism which is not covered by the course proposed; secondly, because we think it inadvisable that a student should for a considerable period give

[1] A three years' course taken subsequently to the certificate course. There is no corresponding course in the Punjab University.

[2] General Memoranda, page 166.

[3] *Ibid.*, page 176.

up his other studies and devote himself exclusively to English; and lastly because we think the procedure proposed by the Shams-ul-Ulama might be regarded by students as an alternative way of taking an arts degree which would cost less money though more time and be chosen by them on that account. But we agree with our witnesses that it would be greatly for the benefit both of the Calcutta Madrassah and of the University if a relationship could be established between them, and we think it might be established in other ways.

26. In the first place, the Anglo-Persian Department should be developed by the addition of two classes, so as to become an intermediate college attached to a high school.[1] It would be advisable to remove the junior classes and to locate them elsewhere in order to avoid congestion. The students of the department would be precisely in the same position as students of other intermediate colleges and would be able, after taking the 'intermediate college examination,' to proceed to degrees in the University in any subject in which they were qualified. They would of course be as free to go to other colleges as to the Islamia College. But the Islamia College would be specially fitted to meet the needs of the greater number, and we hope that the Anglo-Persian department will serve as an important feeder of that college, in which Islamic studies as well as other subjects will be taught, and to which we have recommended that the chief university teachers of Arabic and Persian should be attached.

27. We now come to the Arabic department, between which and the University no relation exists at present. We have given careful consideration to the means by which the University, without any interference with the independent administration of the Madrassah, may enable madrassah students of the senior stage[2] to obtain academic recognition of their proficiency in Islamic studies. We recommend that the University of Calcutta should institute a diploma in Islamic studies to be awarded after an examination open to madrassah students of a prescribed standing, and with a knowledge of English,[3] and to other candidates with approved qualifications. But students who, after completing the senior

[1] Chapter XXXII, para. 7.

[2] Para. 13 above.

[3] We may point out that of the 550 pupils of the Arabic Department of the Madrassah about one-third take English in preference to the alternative language, Persian.

madrassah course, wish to qualify themselves for the Calcutta University degree in Islamic studies should become members of the Islamia College. After completing the prescribed course of study, they would present themselves for the degree examination as students of the Islamia College, the authorities of which, in arranging the course of instruction, should avail themselves of the learning of the Madrassah maulvis and should send their students to courses given by the latter either at the Madrassah or at the Islamia College, as may be found most convenient.

28. The distinction which we have drawn between a diploma and a degree will allow the University to admit to the examination for the diploma in Islamic studies candidates who have received their training under conditions which need not conform in all respects to the requirements strictly enforced in the case of constituent colleges. And the conditions under which we propose that candidates for the university degree in Islamic studies should be required to present themselves after an approved course of study at a constituent college will encourage the authorities of the Islamia College to avail themselves of the services of the learned maulvis of the Madrassah.

29. But, if at a future time, the Calcutta Madrassah should be prepared to conform with the requirements which the University must exact in the case of every constituent college, and should approach the University for recognition on those terms, we should approve the establishment of this closer connexion between the University and the Madrassah.

30. As part of the scheme the senior madrassah stage (stage *b*)[1] should be reorganised so as to correspond in duration, though not in curriculum, with the course of the senior madrassahs combined with a two years' intermediate course, such as will be established in Dacca, and we hope, elsewhere.[2] It will continue to be the old orthodox course, the Dars-e-Nizamia; and English will continue to be an alternative to Persian as at present. We propose that after this stage there should be a trifurcation. The pupils of the senior stage should have the opportunity of (1) going on to the present orthodox course of the title stage which will remain undisturbed, or (2) if they know English, of proceeding to a university diploma

[1] Para. 22 above.

[2] Chapters XXXII and XXXIII, para. 100.

course, which will be given in the Madrassah, or (3) if they know English, of proceeding to the Islamia College to work for a degree in Islamic studies.

31. The Calcutta Madrassah examinations would continue to be conducted, as at present, by the Department of Public Instruction, acting through a Board of which the Principal and Head Maulvi are *ex-officio* members.[1]

32. Under the existing conditions there is much criticism of the university teaching by those connected with the Madrassah, of the Madrassah teaching by those connected with the University. The Musalmans of Calcutta, in their supplementary note on the Calcutta Madrassah, said :—

"The teaching now provided for the M.A. degree in Arabic and Persian is so poor that students after taking their degree are not really competent to act as professors in colleges. Those who have received their entire education in the old orthodox style and have a thorough knowledge of Arabic and Persian, or of both, are not eligible to become professors on account of their ignorance of English. The result is that the colleges have to appoint persons whose knowledge of Arabic and Persian is insufficient and thus the standard of Arabic and Persian gets lower every day .... The want of provision of Persian and Arabic courses is one of the complaints of the Muhammadan students in Calcutta. The Madrassah will always have a strong staff of Persian and Arabic teachers and they can always deliver lectures to students for whom colleges make no provision for the study of Persian and Arabic."

33. The scheme which we propose will, we hope, help to bridge the differences between the two schools. The long standing difficulty of obtaining thorough Arabic scholars with a good command of English for ordinary university teaching will disappear; and the eastern scholars of the older type will unite with their unrivalled knowledge of the Arabic language and literature an acquaintance with the critical methods of the West. This at least is our aim in suggesting a scheme for the association of the Calcutta Madrassah with the reconstituted University.

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[1] Dr. Zia-ud-din Ahmad is of opinion that the Calcutta Madrassah examinations corresponding to the 'high school' and 'intermediate college' examinations should be conducted by the Committee of the Board of Secondary and Intermediate Education which will conduct the examination of the reformed madrassahs (see Chapter XXXI, para. 27, and Chapter XXXIII, para. 108). The system would, he thinks, ensure the co-operation of the staffs of the Dacca University, the Islamia College, and the Calcutta Madrassah, and in that way the character of the Committee would be made stronger and more representative. The syllabuses of the two sets of examinations conducted by the Committee would, of course, be different.

34. We have suggested elsewhere that the future of India depends upon finding a civilisation which will be a happy union of the Hindu, Islamic and European civilisations. The institution of such departments as have been recommended in this chapter would be a practical step to this end. They would constitute a new departure in the teaching organisation of the Indian universities. The success of that departure must largely depend upon the persons on whom it would fall to translate our scheme into practice.

35. We must in conclusion make a brief reference to the reorganisation of Islamic studies as now pursued by post-graduate students in the University. On this subject we have received an interesting memorandum from Dr. Abdulla-al-Mamun Suhrawardy, University Lecturer in Arabic, Persian and Islamic History.[1] From this memorandum it appears that the M.A. courses in Arabic and Persian are not specialised in the same manner as the courses in some of the other oriental languages, notably in Sanskrit and Pali. Dr. Suhrawardy suggests that, at the M.A. examination in Arabic, all candidates should be required to take up four compulsory papers dealing with the history of Arabic literature, the Quoran, Arabic grammar, rhetoric and prosody and semitic philology; and in addition to make a choice of one of six alternative groups, each of four papers, dealing respectively with literature, exegesis of the Quoran, jurisprudence, philosophy, science and Islamic history. In the case of the Persian language, a similar arrangement is suggested. We do not feel competent to form a definitive judgment on this matter, but it is obvious that the feasibility of the plan outlined is dependent upon two factors, namely, first, the employment of a highly qualified staff of specialists, and, secondly, the attainment of a considerable general knowledge by students of Arabic and Persian at the graduation stage. These are manifestly problems which should engage the attention of the authorities of the new University. There is one point, however, which it is important to bear in mind; though the chairs in the subjects mentioned should naturally be attached to the Islamia College, the teachers of the Calcutta Madrassah should co-operate with them; and the lectures should be open to all students.

[1] General Memoranda, page 381.

CHAPTER XLIII.

The Training of Teachers.

I.

1. We feel that in this chapter we approach one of the fundamental problems of our enquiry, a problem beset with financial and other difficulties but insistently calling for solution. It has been shown in earlier pages of this report that the intellectual vigour of the University is impaired by the quality of the teaching given in the secondary schools;[1] and that the tone of the schools influences the University not only in the sphere of teaching and study but even more intimately in the temper of its corporate life.[2] The shortcomings of the secondary schools in Bengal are notorious. They are deplored by the Government[3] and, as our evidence proves, recognised by a large body of public opinion. In this chapter we shall indicate the help which might be given towards the improvement of the schools by the Universities of Calcutta and Dacca under the new conditions proposed in this report. We believe that this help would in any case be of material importance; it will, however, be far more widely efficacious if accompanied by the improvement in the salaries and prospects of the teachers which is admittedly needed but can be compassed by Government alone.

2. We recommend that a department of education should be established in the University of Calcutta at the earliest possible moment; and in Chapter XXXIII we have made a similar proposal in regard to the University of Dacca. The aim of these departments would be to promote the systematic and practical study of the science and art of education; to provide increased opportunities for the professional training of teachers; and to arouse

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[1] Chapters VIII, IX, X and XXXI.

[2] Chapter XIX.

[3] Quinquennial Review of the Progress of Education in Bengal, 1912-13 to 1916-17, by W. W. Hornell.

among the students a deeper interest in the work of the teaching profession and in the opportunities which it offers for public service.

II.

3. During the last twenty-five years there has been a significant change in the main direction of educational thought in the West. This has shown itself in three ways. First, it has been realised that there is a very close connexion between the social and economic condition of a people and the educational opportunities provided or practicable for it; and that, while social reform cannot be effected without educational stimulus, educational reform cannot be achieved satisfactorily without great improvements in social environment. Secondly, careful observation has shown the need for adapting the course of instruction and methods of discipline, especially in the early stages of education and during adolescence, to the individual needs both of boys and girls according to the differences in their physique, temperament and rate of mental growth; with the result that what had seemed to be a comparatively simple problem has proved complex and not capable of being solved by the uniform application of simple rules. Thirdly, the extreme importance of the early stages of education has been more fully recognised. They should foster the healthy growth of mind and body through activities which call forth initiative and self-expression and at the same time teach assiduity and self-restraint. But for this purpose the imparting of the meagre elements of instruction does not suffice. Along with these changes in point of view there has come an increasingly strong demand for the extension of educational opportunities both by the improvement of the elementary schools and by giving access to secondary and higher education to children of promise from every grade of society. As a result of the clearer understanding of the complexity of the problem and of the need for combining better organisation with the preservation of varieties of training, there has been much discussion of the ways in which the State should discharge its functions in national education, and of the safeguards which may be found for free initiative and for the continuance of diverse educational traditions (each contributing something of value to the nation) in a system which, because its operations are

necessarily on a vast scale, is liable to enforce too great a uniformity in outlook, if not in procedure.

4. This new movement in the educational thought of the West has had its chief source in social and economic change. But its implications have been made clear, its presuppositions critically examined and its aims steadied by the work of the departments of education in a great number of universities, European and American, and by the books which they have produced. The chief reason why these departments have been so fruitful is that in a teaching university the student of education is thrown into contact with others who are investigating problems in psychology, in economics, in history and in various branches of science, including medicine. All these studies have a direct bearing upon the problems of education. In a centre at which all are represented the study of education is stimulated and guided by many converging influences which bear upon the different aspects of this many-sided subject, suggest new lines of enquiry, indicate methods of scientific investigation, and criticise any tendency to rely upon ill-founded assumptions or to adopt hurried generalisations. Done under these conditions and with the collaboration which these conditions allow and encourage, the work of the university departments of education has been of fundamental importance in its influence upon the course of legislation, upon educational administration and upon public opinion. It is too soon to conjecture what may be the ultimate outcome of the new educational movement which is powerful in the West; but through the influence of the universities it has been more deliberate, discriminating and practically efficacious than any earlier movement in educational thought of corresponding magnitude and duration.

5. Down to the present time the Indian universities have not had the same opportunity as has been enjoyed by many universities in the West of organising their resources for the systematic study of education. Many useful and distinguished contributions have been made to the subject by writers, both Indian and European, resident in India, and especially by those engaged in the training colleges for teachers in Bengal, Bombay and Madras; the usefulness of their observations and researches having been greatly increased by the efforts of the Bureau of Education which

owes its origin to Lord Curzon, and by the circulation of the Indian educational magazines. But the value of the work of these comparatively isolated students shows how much more would be possible if they enjoyed the opportunities which the department of education in a teaching university alone can offer. A new school of educational thought might arise here, stimulated by the thought of the West but founded upon a scientific study of Indian needs and conditions. Systematic study of educational questions is admittedly much needed in India at the present time. Far-reaching changes are apparently imminent, not least in the sphere of primary education, but very little has been done to prepare for these changes by systematic enquiry or experiment. Yet the conditions are favourable for setting such enquiries on foot and for instituting experiments in new methods of teaching and of school-organisation. In many provinces, and not least in Bengal, there is a widespread and growing interest in education and a conviction of its fundamental importance to the community. What is to be desired is that there should be a number of vigorous and independent centres of educational thought in India, closely in touch with the scientific progress which is being made in the subject elsewhere, intimate with the special needs of India and with the conditions under which those needs must be met, and well-equipped with the means of practical experiment. Such centres should be found in the teaching universities, of which the departments of education, if strongly staffed and well-organised, would in a comparatively short time produce work of great value and exert great influence upon public opinion.

6. It is mainly for these reasons that we recommend the establishment of departments of education in the Universities of Calcutta and Dacca. In each there should be a professor of the subject and a numerous staff of assistants, one or more of whom should have the rank of reader. In both universities the new department of education should work in close association with those engaged in the study of the vernacular and of English and avail itself of the services of the teachers of phonetics. Equally intimate should be the connexion between the new departments at both universities with the departments of science and with that of physical training, the latter being at Calcutta under the Board of Students' Welfare. Both at Calcutta and at Dacca, but especially at the first-named, it would be possible for the depart-

ments of education to consult in connexion with the subject of manual training experienced teachers of technology. And at both universities, but particularly at Calcutta, the help of medical men would be available in the study of those aspects of education which call for a knowledge of medicine and of the treatment of what is abnormal in mind or body. At Calcutta the department of experimental psychology should have an intimate connexion with the department of education, and in both universities there would be opportunities for collaboration with the departments of philosophy, history and of economics.

7. We think it very desirable that in both universities there should be a demonstration school under the direction of the university professor for the practical trial of new methods of teaching, new combinations of school subjects and new plans of school organisation. Such a school must be relatively small in order to allow experimental work to be done at the director's discretion. The form of its organisation should be determined by the professor at the head of the department, who should have the assistance of a staff of teachers chosen by himself. A small school of this type is the laboratory of a professor of education. Its great value is proved by the results of the work done in the University School at Chicago under Professor John Dewey, in the school at Jena under Professor Rein and in the Fielden Demonstration School at Manchester under Professor Findlay. It is not in the ordinary sense of the word a practising school, since the latter must, in order to give the necessary experience to students in training, follow the main lines of the organisation normally found in the schools in which the students will afterwards be professionally employed. It is a school of free experiment and as such is valuable as a stimulus and guide to students in training, though designed not as a model to show the best that can be done under normal conditions but as a place in which at the discretion of its director new experiments can be tried. Experience shows that schools of this type under capable direction are much appreciated by many parents and that there is a good demand for admission to them. It is generally found convenient to limit the age of the pupils to about twelve or fourteen years and the schools thus afford an acceptable alternative to the primary schools and to the junior classes of secondary schools. The feasibility of such a school in Calcutta is shown by

the success of the Boys' Own Home, the work of which has been already described.[1]

8. The chief function of the new university departments described in this chapter would be to promote the systematic study of the science and art of education. The university library should have an important collection of works on this subject, including series of the chief official reports which have been issued in India, Great Britain, the United States, Japan and other countries. The principal educational journals of the world should be available for consultation. The University should be prepared to issue a quarterly or half-yearly bulletin recording the work done in the department and a series of monographs on educational subjects under the general editorship of the professor. When thus equipped with its own demonstration school and facilities for publication, the department of education would attract graduate students from all parts of India and from other countries. It would offer opportunities for investigation and research in Indian education which are not at present available.

9. The experience of members of the staff of the university departments of education would be of service to the Board of Secondary and Intermediate Education, to the intermediate colleges (in which there would be a special course on education) and to the committees of high schools. And we attach not less importance to the influence which the departments of education might exert on public opinion by courses of public lectures delivered in Calcutta, Dacca and the chief towns in the mufassal. The aims and progress of the new educational movement in the West should thus be made more widely known in Bengal; the work of great educational reformers in India and in other countries should be described; the social and educational aims which should guide the development of primary, secondary, technical and university education in India should be set forth and discussed; attention should be called to any work of special excellence done in schools in Bengal; and incidentally the defects of the present system should be disclosed. Such courses of lectures would help in dispelling the narrow view of the functions of a school which is still prevalent and is one cause of present deficiencies in the methods of secondary education.

[1] Chapter VIII, paras. 65-73.

III.

10. We now turn to another side of the work of the university departments of education, the share which they will take in the professional training of teachers. Both in Calcutta and in Dacca it will be necessary to define the relation of the department of education to the training colleges for men and for women.[1] In Calcutta the David Hare Training College for men teachers (the proposal to transfer which to new buildings on a suburban site has been mentioned in Chapter XXI) belongs to Government; the training department (for women teachers for higher classes in secondary schools) attached to the Diocesan College is aided by Government, the training class at Loreto House is unaided. It has also been decided by Government to establish in Calcutta a new residential training college for women teachers.[2] In Dacca both the Training College for men and the training class for women teachers at the Eden High School are under Government. It is evident that both in Calcutta and in Dacca there should be close co-operation between the university department of education and the training colleges, though this co-operation must, under the conditions which prevail in India, be distinct as regards the training colleges for men and women respectively.

11. In Dacca the problem is comparatively simple. We have proposed in Chapter XXXIII that the training college for men should be merged in the university department of education and have suggested that it would be convenient, at any rate in the first instance, if the head of the training college became professor of education in the University. The Eden High School would become an intermediate college and should provide among other intermediate classes a course of professional training for women teachers. These classes, which would be under the Board of Secondary and Intermediate Education, should have their own staff of teachers, but some courses of lectures might be given at the Eden High School by members of the staff of the university department of education, and the teachers conducting the training class at the Eden High School should be encouraged to attend courses in the department.

[1] An account of the training colleges for men is given in Chapter XXI, and of those for women in Chapter XIV.

[2] Quinquennial Review of the Progress of Education in Bengal, 1912-13—1916-17, page 69.

12. In Calcutta the situation is more complex. The headquarters of the department of education should clearly be in the main university buildings. It is there that the courses of public lectures arranged by the department should be given. Seminar rooms should be provided in the immediate neighbourhood of the university library for the use of the students of the department and especially for those doing advanced work under the professor's direction. The courses on education sanctioned as part of the B.A. and B. Sc. courses should be given in the university buildings or at some college equally convenient for general access. The professor of education should have his office at the centre of university business, because his work would entail close co-operation with many other departments of the University and would bring him into close relations with the Board of Secondary and Intermediate Education and other public bodies. In addition to this, the students in training should be thrown into contact with students of other subjects and should take an active part in the general life of the University. All these considerations point towards placing the training college, which should be under the direction of the professor of education, in the immediate vicinity of College Square. And, as it is essential that there should be in close connexion with the training college a large and well equipped high school for purposes of school-practice, one of the schools in central Calcutta (preferably one to which an intermediate college was attached) should be planned and adequately staffed for this purpose. This school should be regarded by the Board of Secondary and Intermediate Education as an integral part of the university training college, and the professor of education should be consulted in the choice of its staff and be given considerable authority in its organisation and management. The essential features of the university department of education are its lecture and seminar rooms, close to the university library and at the centre of university work; a large model school for the students' practice; and a small demonstration school for experiments, as mentioned above. These should all be in the same neighbourhood and within easy reach of one another. All should be under the professor's immediate and constant supervision.

13. The David Hare Training College in College Square is well-situated for the purposes of a university department of education. But unfortunately, as we have stated in Chapter XXI, its accommodation is wholly inadequate even for its present requirements

and still more so for those which would have to be met under the new conditions. If therefore the new department of education is established in the neighbourhood of the central university buildings, a fresh site must be found and the necessary accommodation provided upon it. We recommend this as the only arrangement which will be permanently satisfactory. The department of education, with its training college, model practising school and demonstration school, will in future become one of the most important institutions connected with the University. It should be in a central position, easily accessible from all parts of Calcutta and close to the university library and lecture rooms. The realisation of this plan will entail close co-operation between the University and the Government, the latter acting through the Board of Secondary and Intermediate Education. We suggest therefore that the training college should be organised as a constituent college under a governing body of which the Board, as the chief contributor to the cost, would appoint the majority of the members, the University nominating the remainder. The professor of education should be a member of the governing body and should act as principal of the training college. The Board should assign for the school-practice of the students a large and well staffed high school in the near neighbourhood of the college—one of the schools which it will find it necessary to provide for Calcutta when it undertakes the reorganisation of secondary education in the city. And, if possible, the high school chosen for the practice of the training college students should be one to which an intermediate college is attached, so that the students may be able to study efficient methods of class-teaching from the junior classes of a high school upwards to the most advanced stage of secondary education.[1] In addition to this, a small demonstration school for younger children should be placed under the direction of the professor, in order that new methods of teaching and new courses of training may be tested by systematic experiment.

14. Thus equipped and centrally placed, the department of education would be in a position to render unique service to the schools and intermediate colleges of Bengal. Year by year it would furnish them with an increasing number of well-trained graduate teachers. The lectures which it would provide would give stimulus

[1] Para. 43 below.

and new ideas to those employed on the staffs of schools in Calcutta; its vacation courses would attract to it teachers and students of education from all parts of the Presidency and from even more distant places. The department should be the centre for the study of methods of teaching English. By training teachers of science it would meet one of the most pressing needs of the schools. But its usefulness would not be confined to the large body of teachers in high schools and intermediate colleges. Students preparing themselves for teaching posts in the University would quickly find it to their advantage to attend its courses on methods of teaching and on the principles of education. School inspectors and officers engaged in the administrative work of education would avail themselves of the courses offered by the department. The whole of the educational life of Bengal would feel its influence. Through the spirit of its teaching and through its practical demonstrations, a new and more inspiring idea of education, and especially of secondary education, would gradually be diffused. It would be the centre for new investigations in the science and art of education, for the comparative study of educational systems and for researches into the history of education in India and elsewhere. The practical training, on the excellence of which the department should chiefly pride itself, would be raised from any narrowness of outlook by this close association with scientific studies. What Teachers' College is to Columbia University, the new department of education might eventually become to the University of Calcutta.

15. But it may not be immediately practicable to establish a training college with this extensive though indispensable equipment in the near neighbourhood of the University. And some time may elapse before the Board of Secondary and Intermediate Education will find itself able to take in hand the reform of high schools in Calcutta and to build a school in which the students of the university training college could enjoy opportunities of systematic practice. Meanwhile, as we have explained in Chapter XXI, the Government of Bengal have decided to remove the David Hare Training College from its present position and have acquired for it a site of about six acres in Ballygunj. We should regret the abandonment of this carefully considered plan. The new site proposed has great advantages. It has pleasant surroundings. It is near the country. The college will not be cramped for space. Its students will have facilities for outdoor exercise and for games.

The plan includes a large model school for practice. Other schools, suitable for observation, are within easy reach. The number of students admitted to the college will be small in order that their practical work may be exacting and well-supervised. For the purpose in view—that of a self-contained training college, affiliated to the University but not implicated with other sides of the university's teaching work—the plan seems to us admirably designed. But the David Hare Training College in its proposed new situation will be ill-adapted to serve as the headquarters of the University's department of education. It will be separated by some miles from the main university buildings. There is no direct communication by tram car between the site in Ballygunj and College Square. The students working in the college would be cut off from the main current of university life. The professor of education, if he were principal of the training college, would find it difficult to combine his duties at the college with those requiring his presence in the University itself. He would either be isolated from the University, or unable to give constant supervision to the practical work done in the training college and its attached model school.

16. We cannot therefore recommend that, as a permanent arrangement, the new training college in Ballygunj should be recognised as the headquarters of the new university department of education. For the latter there must be new and convenient buildings in the neighbourhood of College Square. These should be designed to accommodate a much larger number of students than will be provided for in the plan approved for the site in Ballygunj. But the training college as designed in the scheme approved by the Government will serve a very useful purpose, apart from what may be undertaken in future by the university department of education. Its specific aim will be the improvement of methods of class-teaching and of school-organisation by means of intensive school-practice under favourable conditions. At the present juncture no aim is more practical or important than this. A beginning has to be made, and the work should be organised on a small scale in order that the school-practice may be thorough and systematic. The need for a new standard in training is urgent. Though it will send out only a small number of trained teachers every year, the college will be so organised and equipped as to enable it to guarantee the efficiency of all the students whom it recommends for appointment in the schools. A postponement of the date at which it will

begin its work would be unfortunate. The college will always be needed. Its work will not clash with that of the university department of education. Ultimately it should be enlarged; and many other training colleges will be required in addition to it. But it should be started at once in order to set a high standard of practical training and to help in meeting without delay, though on a small scale in point of numbers, the urgent need for teachers who have been well prepared for their work in schools.

17. Though the training college on its new site at Ballygunj will not serve the purpose of the university department of education, it might be used temporarily as the training institution attached to the department during the interval which may elapse before the new training college and model school can be completed in central Calcutta. We hope that this interval will be short. In the meantime, however, there should be no delay either in founding the department of education in the University or in starting the work of the new training college in Ballygunj. At first, and as a temporary makeshift, the department of education could have its headquarters for general lectures and seminar work in the university buildings and carry on its practical training at the college in Ballygunj. The Government (or, as soon as the management of the training college has been assigned to it, the Board of Secondary and Intermediate Education) should for the time associate the college very closely with the university department. The Government would best decide in what way to associate the university professor with the work of the college: if he were appointed principal, he would need a vice-principal to whom he could delegate responsible duties.

18. If this temporary arrangement is contemplated, the plans for the new training college in Ballygunj will require some reconsideration. The college is at present intended to train (i) teachers for high schools, and possibly for *guru* training schools, (ii) deputy and sub-inspectors whose work lies or will lie in the supervision of primary and middle schools. We see no objection to the college being used, so far as accommodation allows, for the purpose of training inspectors, but its main work should be the professional training of students intending to teach in high English and other secondary schools or already engaged in teaching in such schools. The plans for the college provide accommodation for sixty resident students, the number being purposely kept small

in order that each student may receive careful supervision in his practical work. With this aim we agree, but we doubt whether the number of places proposed is large enough. Without impairing the thoroughness of the practical instruction, it should be possible to provide, even in the first instance, for one hundred students, with residential accommodation for, say, three-quarters of that number. Ultimately there will be need for a very considerable further extension, and this will be unobjectionable when a better system of class-teaching has been firmly established in a large number of the secondary schools in which the students will have received their earlier education. The Board of Secondary and Intermediate Education will therefore have to consider whether the site now proposed is sufficiently large for its purpose. It comprises rather more than six acres, of which more than half will be assigned to a model practising school of ten classes—two primary classes, four middle school classes and four high school classes. It may be found wise to devote the whole of the proposed new site to the training college so as to allow for future extensions, and to build the model practising school elsewhere in the neighbourhood.[1]

19. The object of the model practising school which it is proposed to establish in connexion with the Ballygunj Training College is somewhat different from that of the demonstration school which we have suggested in paragraph 7 above. The former is designed to show what can be done, under right conditions of staffing and organisation, by any large school of the high school type. The latter is intended to afford opportunities on a much smaller scale for the experimental trial of new methods of teaching. The first, in order to furnish a model, must be planned to accommodate a large number of pupils; in the plan for the Ballygunj Training College the school will accommodate three hundred. The second, in order to avoid the embarrassments which any sudden change of plan would cause in a large institution, must be small and more plastic in its organisation. In present circumstances in Bengal, a training college connected with a university should have both types of school attached to it—the one as a large-scale model of what can

[1] The training colleges at Allahabad and at Lahore are each on a site of more than twenty acres; and at Patna a site of twenty-seven acres has been acquired for the combined purpose of a training college and model practising school.

be reproduced elsewhere; the other, with a much smaller number of pupils (say fifty or sixty), as a place for free educational experiment. As the general standard of efficiency in the ordinary high schools rises, the need for a model practising school will decline. But, as furnishing a corrective to established practice even in a well-organised system of education, the experimental school will continue to be necessary, and will indeed become more valuable in proportion to the tenacity of an authorised tradition.

IV.

20. The proposals which a number of experienced witnesses have made to us for changes in the courses of professional training for teachers have been summarised in earlier chapters of this report.[1] They range over a wide field from matriculation to post-graduate study, because under present conditions the teaching staffs of the high English schools are recruited partly from graduates, partly from those who have passed the intermediate examination and partly from those whose only qualification is that they have matriculated. Our recommendations therefore must refer to the province of the Board of Secondary and Intermediate Education as well as to that of the University, the responsibilities of the two authorities being in this matter closely intertwined.

21. Three essential requirements are rightly emphasised by our correspondents. First, before entering upon employment in a school, the candidate should have a competent knowledge of the subjects which he will be called upon to teach in it. Secondly, he should have had some practical training in a good school. Thirdly, his theoretical training should be neither hurried nor superficial. But under existing conditions, the first of these requirements is often unfulfilled; the second is rarely possible; the third has been too little regarded by the University in framing its regulations for the examination for the degree of bachelor of teaching.

22. In all these respects a great improvement may be effected by the Board of Secondary and Intermediate Education and the University acting together in close co-operation, provided that each has sufficient funds at its disposal. The Board will be in a

[1] See Chapter XXI for training of men teachers, Chapter XIV for training of women teachers. Also volume of General Memoranda (Sections XVII, Training of Teachers and XVIII, Courses and Methods of Teaching).

position to enable the schools to employ more and better qualified teachers, as well as to provide laboratories and other necessary additions to their present equipment. The school courses will thus be widened and strengthened. Advice and help will be given to the teachers by inspectors. The requirements of the new high school examination will replace those of the present matriculation and will encourage better teaching and a broader course of study in the schools.[1] At the intermediate colleges the students will be well and thoroughly taught. There will thus be a great improvement in the qualifications of the average student. He will have been well-grounded in a course which will serve as a basis for which he has to teach in school. He will have a greater command of English. There will be an increasing demand for the services of competently trained recruits for the teaching profession. And the intermediate colleges and the University will be in a position to provide improved courses of professional training.

23. Under the new conditions proposed in this report, the employment of any teacher who has no higher qualification than success in the high school examination should be forbidden by the Board's regulations in the case of any recognised high English school. Matriculates who are already engaged in schools of this grade should be allowed to continue their service and, with the special approval of the Board, to accept new appointments on the staffs of other schools. But all future recruiting of high school staffs from students with this low grade of qualification should be stopped, arrangement being made for the recognition of suitable qualifications in the case of teachers of special subjects.[2]

24. In Chapter XXXII we have proposed that a course specially designed for those intending to become teachers should be provided at the intermediate colleges. This course would include the principal subjects of the high school curriculum (certain alternatives being allowed to meet the needs of different students) together with a simple introduction to the art of education and some practical training in teaching. This course will furnish a considerable proportion of the recruits for the replenishment of the high school staffs. We have recommended that students who hold this form

[1] Chapter XXXI, paras. 46 and 70.

[2] For work in the lower classes of high English schools, the students trained in the first grade training and normal schools will be a useful source of supply.

of intermediate college certificate should be regarded by the University as entitled to admission to its arts courses. They would also be qualified to present themselves for the examination for licence in teaching after an interval of two years, including one year's practical experience in a recognised school and attendance at an approved course at a training institution.

25. For some time to come, it is from the students who have taken this course at an intermediate college and have subsequently qualified themselves for the licence in teaching that a considerable proportion of the class teachers in high schools is likely to be drawn.[1] The provision of a satisfactory course of professional training for students of this type is therefore a matter of great importance. The intermediate course which we propose would secure their being well-grounded in English and other school subjects. They would also have a systematic course of physical education. They would receive instruction in the principles of education, this course including a simple introduction to psychology. From the methods employed in the college they would get a good idea of well-organised class-teaching. In addition to this, they would be required during the later part of their course to take a class in school under experienced supervision and would thus receive some valuable practical training in the art of teaching and in the preparation of lessons. After passing the intermediate examination, they would have a year's experience on the staff of an approved school, the head master being responsible for giving special supervision to their work. They would then go to a training school to prepare for the examination for the licence in teaching. The Calcutta University regulations[2] require the course of practical training at the training school to extend over a period of six consecutive months. We recommend that it should be extended to a year. The aim of the course should be to give the students a clear understanding of the general principles which underlie a teacher's work, to deepen their knowledge of the subjects which

[1] The minimum scale of the staff in high English schools in the Burdwan division (1918) requires that, out of a staff of 8 teachers (excluding pandits and maulvis), 2 shall be graduates, 5 with the intermediate qualification and 2 matriculates with at least 5 years' experience. In a representative number of high schools in the same division (1918) the number of teachers with the degree and intermediate qualification respectively are about equal.

[2] Chapter XXXIX.

they will be required to teach in schools, and to impart to them through systematic practice in the class room a higher degree of technical efficiency in the art of teaching. The course on the principles of education which each of the students would have previously received at the intermediate college would lighten the burden of the theoretical side of the training course. This part of the course should be kept in very close relation to the practical work and be made as simple and unpretentious as possible. Each student should be required to select a group of subjects in the high school course (*e.g.*, English, history and geography; mathematics; science; or some combination of these or other subjects) as his main course of study at the training school. The greater part of his time should be given to the further study of this group of subjects; to regular teaching practice in them under careful supervision; and to the preparation of lessons for his class in the practice-school.

26. We recommend that in future the examination which the University conducts for the licence in teaching should be held at the training schools; and that at each of these centres of examination the papers in the theoretical part of the subject should be based upon a syllabus of instruction previously submitted by the authorities of the training school and approved by the University. Great weight should be attached to the practical part of the examination (which should have regard to the candidate's knowledge of the subject taught as well as to his skill in teaching it); and before passing a candidate in this part of the examination the examiners should inspect and approve the note-books recording the practical work done by him during the course. At least half of the aggregate of marks should be allotted to the practical part of the examination. The university certificate or licence should name the subjects of the school curriculum in which the successful candidate has shown his proficiency as a teacher. A candidate should be awarded distinction in any subject or subjects, in which his work in the examination showed special excellence.

27. In framing these recommendations we have followed the main lines of the present regulations for the Calcutta University licence in teaching, but have proposed changes which will increase the weight given to the knowledge of subjects taught in schools and to skill in teaching them. In its requirements on the

theoretical side of the subject (an aspect of the teacher's training to which we attach great importance) the new course, though less ambitious in range than the present course, should be not less exacting. If it is carefully adjusted to the practical side of the course, the theoretical part will have increased educational value; and, as the period of training will be nearly doubled in length, the student will have more time to assimilate the abstractions with which in studying the theory of education he must make himself familiar.

28. The regulations for the licence in teaching should, as far as possible, allow a candidate to present himself for practical examination in the class-teaching of any subject which forms part of the approved curriculum of a secondary school, as for example manual training, physical education, drawing and singing. A teacher of any of these subjects would gain from a study of the principles of education as part of his professional course. In an earlier chapter[1] we have spoken of the need for the professional training of women for the work of giving instruction in the home-arts, domestic hygiene and other subjects in girls' schools. Teachers of these subjects should be allowed to present themselves for the examination for the licence, and in framing its regulations on this subject the University should consult the Board of Women's Education. In some cases training in these special subjects might be given in a training school as one department of its work. But special institutions for training teachers in these branches of education should, if they provide systematic instruction in the principles of teaching, be recognised as centres of examination for the licence.

29. It has been shown to us in evidence[2] that many students, some of whom would make useful teachers, are obliged by poverty to give up their studies after passing the matriculation. We offer the suggestion that the Board of Secondary and Intermediate Education should institute a number of bursaries of sufficient amount to cover the cost of the two years' course of training at an intermediate college and (after an interval of one year's remunerated employment in a secondary school) of the year of residence at a training school, and that these bursaries should be awarded after

[1] Chapter XIV.

[2] By Mr. W. E. Griffith. General Memoranda, pages 362-364.

the high school examination to approved candidates who are prepared to enter into an undertaking to complete the course leading up to the examination for the licence in teaching and to serve subsequently for a period of not less than four years as a teacher on the staff of arecognised secondary school.

30. We now turn to the higher professional qualification, the bachelor of teaching, for which candidates are eligible one year after passing the B. A. or B. Sc. examination. This corresponds to the teacher's diploma which is taken by a considerable number of graduates in British universities. When the training of teachers for secondary schools becomes general in Bengal, the bachelor of teaching will be the qualification sought by all graduates who intend to enter the teaching profession. At present, however, the number of those who take the degree is small.[1] In Chapter XXI we have quoted from the evidence of several experienced witnesses criticisms of the present regulations. The gist of these criticisms is that the course is too short;[2] that the syllabus is too ambitious as regards the scheme of study in the history of education; and that the requirements as to teaching-practice under skilled supervision are insufficiently exacting.[3] An even more serious ground for complaint is the weakness of some of the candidates in their knowledge of English, history and geography.

31. The teaching which will be given in the intermediate colleges, and the improvements in the course of instruction in the high schools which will result from a re-organisation of secondary education in Bengal, will in due time greatly lessen the last mentioned defect, even if they do not entirely remove it. The students will have been more thoroughly grounded; their knowledge of English will be good; all of them will have gone through a systematic course in history and geography at school. The training colleges will thus

[1] In 1916-17 sixty-two candidates entered for the examination and fifty passed. The average number of those who took the degree in the preceding four years was forty-nine.

[2] The course at the Training College is nominally ten months, from the beginning of July to the end of the following April. Mr. W. E. Griffith (General Memoranda, page 362) points out that in 1917-18 the course did not cover more than seven months.

[3] The regulations require a candidate either to have undergone a course of practical training consisting of not less than 50 lessons for a period of six consecutive months at a training school *or* to have served as a teacher at some recognised school for one academic year previously to the examination. The second alternative does not necessarily secure teaching-practice under skilled supervision and criticism.

in future build upon a firmer foundation. During his course at the Training College a student who has been well taught in ordinary school subjects up to the stage of the present intermediate examination should have no difficulty with the subject matter of what he is learning to teach. And it may be anticipated that the reconstituted university, in prescribing the groups of subjects for the pass B. A. degree, will arrange among its alternatives one or more which will give those intending to be teachers a direct preparation for their future work in school.

32. The course for the degree of bachelor of teaching should extend (with allowances for vacations) over the whole of one academic year. Practical training under experienced supervision should have an important place in the students' work throughout the course. Under present conditions in Bengal, systematic practical work at a training college cannot be dispensed with. We recommend therefore that service on the staff of a school should not be accepted in lieu of this part of the training college course. The requirements now made by the regulations in regard to the study of the history of education should be simplified and reduced. We understand that a change to this effect is now under consideration by the University.

33. We think it desirable that a student should be permitted to offer the principles of education as one of the subjects for the pass B. A. examination. This subject, which would be analogous to the mental and moral philosophy now allowed, should include an introduction to the structure and functions of the human body, ethics and child psychology and be specially adapted to the needs of those intending to be teachers. We commend this suggestion to the university authorities on two principal grounds: the proposed subject, apart from its inherent educational value, would direct the thoughts of the students taking it towards the teaching profession and the opportunities which it offers for national service; and would give an admirable preparation for the professional studies which are the special work of the training colleges.

34. We have now spoken of the two principal sources of supply from which the high schools should in future recruit their staff of teachers, namely the University and the intermediate colleges. Both sources are indispensable; but it is on the supply of teachers who

have graduated at the University, and especially of those who have taken an honours course, that the intellectual vigour of the schools must principally depend. To them in the main Bengal must look for the influence which will raise the high schools to an adequate standard of scholarship and to a greater breadth of outlook. But the teachers educated at the University should also be able to enhance the technical efficiency of the schools by taking the lead in the improvements of their methods of teaching and in the strengthening of the organisation of their corporate life. In order that these teachers may be qualified to render this further service to the schools, they should receive professional training after taking their degree. The course for the bachelor of teaching should (with the exception named in paragraph 35 below) remain a post-graduate course. It should be taken either at a training college possessing ample facilities for school-practice or at an approved high school where, for this purpose, systematic training in practical work together with instruction in the theoretical parts of the subject is effectively provided. Merely to attach a student to the staff of an ordinary high school and to expect him to pick up for himself the technical proficiency and the insight into educational principles which he needs would be a travesty of professional training. And the expense of staffing a high school in such a way that it could give a thorough training to a small group of students both in theory and practice is so great that it is on the training college that the main reliance must be placed for giving technical skill to the young graduates who intend to enter the teaching profession. But the tendency of the training college is to rely too much on theoretical lectures and (partly for reasons of expense) to provide insufficient opportunities of systematic school-practice. We hope therefore that the Board of Secondary and Intermediate Education will insist upon practical training in the art of teaching and of school organisation being the fundamental purpose of the training colleges which it may establish, and that the University will decline to admit to its examination for the bachelor of teaching any candidate who has not spent an academic year at a training college (or in a training department attached to a high school) where every student learns under experienced supervision how to teach and also studies systematically the principles of education. The course, though nominally a year, would in fact extend over

about ten months. For students who have already graduated, this, but not less than this, should suffice.

35. Though a student who intends to enter the teaching profession should be free to begin his course at the training college for the bachelor of teaching immediately after taking his first degree in arts or science, it should equally be open to him to take the training college course after an interval of one or more years spent in teaching on the staff of a school. In the majority of cases the training college course (if it provides full opportunities for school-practice) should precede regular employment upon the staff of a school. This arrangement is preferable in the case of Bengal where very few of the schools are good places of apprenticeship for a beginner. On the other hand, a student who has actually had experience of the hard facts of a teacher's life may, if he has a real interest in education and a gift for teaching, get more out of the training college course than one who comes to it straight from his first degree.

36. There should be a liberal supply of bursaries to enable students who would not otherwise be able to afford it to take the training college course, and these bursaries should be made available both for students who have just graduated in arts or science and for those who are already employed in schools. This would be an extension of the system of stipends now awarded for the same purpose by the Department of Public Instruction. The Board of Secondary and Intermediate Education, on which must fall the chief responsibility for establishing new training colleges for secondary teachers, will doubtless find the offer of bursaries a means of increasing rapidly the number of trained teachers in the secondary schools of Bengal. But this form of benefaction will, we hope, commend itself to many private donors also.

37. Before leaving this part of our subject, we must consider the claims of a deserving class of students whose needs should be considered in connexion with the degree of bachelor of teaching. Under the new conditions contemplated in this report, many students will take employment as teachers as soon as they have passed the intermediate examination. A number of them, we hope, will be enabled by a liberal system of bursaries to take the licence in teaching after a year's course at a training school.[1] But there will be

[1] See paras. 24-28 above.

many who will find it necessary to go straight into the teaching profession as soon as they have gained their intermediate certificate. Some of these may find it possible after an interval to resume their studies and to enter the University. We think that the professional qualification of bachelor of teaching ought to be placed within their reach without insistence on the prior condition (which in their case would be virtually prohibitive) of their taking the degrees of B.A. or B.Sc. But care should be taken (especially in view of the further proposal, made in the next paragraph, that the degree of M.A. should be open to bachelors of teaching) to avoid opening a way to the B.T. degree which might tempt students, though able to afford the regular course, to choose this as the easier alternative in preference to the ordinary route by the B.A. or B.Sc. degree. In the public interest it is desirable that a student who is obliged to break his course after passing the intermediate should be encouraged to look forward to preparing himself for the B.T. degree after a period of service as a teacher in a school. The prospect of being able to do this would stimulate him to persevere with his studies and to improve his qualifications for a teacher's work. We recommend therefore that the examination for the degree of bachelor of teaching should be open to members of the teaching profession on the following conditions without the requirement that the candidate has previously taken the degree of R.A. to R. Sc. A student who, after passing the intermediate examination, has served for two years on the staff of a recognised school, should be allowed to take an approved course of instruction, extending over three years, (partly in the university departments of arts or science, partly at a training college) in preparation for the degree of B.T. He would thus be qualified for that degree one year later than a contemporary who had followed the ordinary course for the successive degrees of B.A. (or B.Sc.) and B.T. Secondly, a student who, after passing the intermediate and afterwards taking the licence in teaching,[1] has subsequently served for one year on the staff of a recognised school should be allowed to enter the University for an approved course (to be taken partly at a training college) extending

[1] See para. 25 above, where it is recommended that, after passing the intermediate examination, a candidate for the licence in teaching should have one year's practical experience on the staff of a recognised school before beginning his year of professional training at a training college.

over two years and on its completion to present himself for the examination for the degree of bachelor of teaching. He would thus also be qualified for that degree five years after passing the intermediate, or one year later than a student who had followed the ordinary course. The latter would have the double degree, B.A. and B.T.; the former, the B.T. degree alone.

38. We recommend further that a teacher who has taken the B.T. degree after one of the courses proposed in the previous paragragh should be entitled to present himself, after a subsequent course of instruction extending over two years, for the examination for the M.A. degree; and that the principles and history of education should be added to the list of subjects in which any candidate may present himself for that degree.

V.

39. Under the arrangements proposed in this chapter, the departments of education in the Universities of Calcutta and Dacca would together send out into the high English schools nearly two hundred trained graduate teachers every year. In addition to this, new training colleges established by the Board of Secondary and Intermediate Education for students who have completed their course at an intermediate college, should supply the schools annually with at least five hundred trained teachers. Thus the staffs of the high English schools would be strengthened each year by seven hundred thoroughly trained teachers, a number which, though it falls far short of the number which will ultimately be required, is seven times larger than the present annual supply of such recruits for vacancies on the staffs of these schools. The influence of these teachers, all of whom would have passed through a systematic course of school-practice under experienced supervision, would quickly show itself in improvements in the high English schools throughout Bengal.

40. Many of them would soon become head masters, or would be appointed to the staffs of intermediate colleges; others would eventually be appointed to inspectorships and visiting examinerships. Moreover, the educational value of a systematic course of professional training is so great that its benefit is felt even in another calling by a young man who, after teaching in a school for a few years, finds it to his interest to transfer himself to some

other career. In Europe and America it is found that many men who have been well trained as teachers are admirably qualified for commercial employment. They have learnt how to express themselves clearly and have acquired experience in organisation and businesslike habits of punctuality and despatch.

41. But improved facilities for the training of teachers will not alone suffice to remove the defects of high school education in Bengal. It appears to us indispensable that a material improvement should be made in the salaries and prospects of teachers both in Government schools and in schools under non-Governmental management. It is true that at present there is no actual dearth of teachers. But the profession is too ill-paid to attract a sufficient number of the abler type of graduates. In Chapter XXI we have described the present conditions of payment in the teaching profession and are not surprised at the general dissatisfaction with which they are regarded. Several of our witnesses declare that the career of a high school teacher in Bengal offers prospects so discouraging that few young men, unless drawn by strong natural inclination, willingly enter upon it. This serious condition of affairs has been recognised by Government and plans have been proposed both for a substantial increase in the salaries paid to teachers in Government schools and for additions to the grants-in-aid to non-Governmental schools for the purpose of making possible the necessary increase in the salaries of their teaching staffs. The annual cost of any effective reform will be large. It has been calculated that it would entail an additional annual recurring expenditure of nearly three lakhs, rising in seven years to eleven lakhs. Even this sum would probably prove insufficient to meet adequately the needs of all the secondary schools in Bengal. But there is reason to believe that the outlay, if accompanied by great improvements in the arrangements for the professional training of teachers, would prove a good investment. The methods of teaching in the high schools could be so improved as to save on an average about two years in the school training of every boy. Furthermore, it would be unnecessary for parents and guardians to spend the large amounts which they pay under present conditions for the private tuition of their sons and wards. An increased expenditure upon the training and salaries of teachers and upon school equipment would be remunerative to Bengal through the economies which it would indirectly

effect both in money and in time. The strong and widespread interest in secondary education, which is manifested in all parts of the Presidency, should concentrate itself in a determination to make the calling of the teacher financially more attractive and to secure abundant opportunities of professional training.

42. At a later stage, when the salaries and prospects of teachers have been improved and when the work of the training colleges has been adequately increased, the Board of Secondary and Intermediate Education will be in a position to insist that only trained teachers should normally be appointed to vacancies upon the staff of any recognised school. But such a rule should not preclude the authorities of a school from appointing with the approval of the Board a teacher who, though he has not undergone a course of professional training, is in their judgment exceptionally well qualified for the duties which it may be proposed to assign to him.

VI.

43. In conclusion we desire to call attention to the urgent importance of one branch of the work which all the new training colleges for secondary school teachers, including the university departments of education, should undertake. They should make it their principal aim, in the first instance, to introduce better methods of class-teaching into the high schools. What is imperatively needed is a kind of teaching which makes work in class not a mere hearing of lessons which the boys have learned out of school, still less a lecture given by the teacher, but a combination of four things, namely a short recapitulation of work done in the previous lesson (this recapitulation being made by the pupils under the teacher's direction); the testing of the pupils' knowledge of what they have been told to prepare; the presentation of fresh material in such a way as to interest the whole class; and the elucidation of important new points by question and answer. The training colleges should supply the schools with competent class teachers in vernacular, in English, in history, in geography, in mathematics and, not least, in science.

44. But in addition to this the training colleges should give their students a clear idea of the corporate life of a good secondary school and practical guidance in the ways of developing it. The

teachers coming from the training colleges should have before them a high standard of school hygiene and should be qualified to help in the organisation of school games and school societies.

45. It must, however, be borne in mind that the older ideas of a secondary school curriculum are now under criticism and that many experiments are being made both in Europe and America with the purpose of giving fuller scope to the practical initiative and varied activities of boys and girls of school age. The university departments of education should keep these new developments of thought and practice fully in view and should have opportunities of making experiment of new methods in their demonstration schools.

CHAPTER XLIV.

MEDICAL EDUCATION.

I.—Introductory.

I. We have in Part I[1] given a sketch of the development of medical education in Bengal, of its present condition and of some of the main problems which it presents. We have seen that the supply of medical university graduates appears at present to be at least equal to the effective demand, though not to the real needs; that there is, especially in the rural districts, great need for qualified medical men, but that there is much difficulty in meeting this need, partly owing to the scattered distribution of the population, and we believe to the unwillingness of medical graduates to isolate themselves from their professional colleagues; and that opinion is divided as to whether the needs of the rural districts should be satisfied by the creation of vernacular medical schools, or by an increase in the number or output of schools like the Campbell Medical School in Calcutta and the Dacca Medical School; and that the Bengal Council of Medical Registration has, by a majority, expressed itself in favour of the latter alternative.

2. We shall limit our recommendations in this chapter mainly to certain questions connected with medical teaching in Calcutta; for the sake of convenience we have considered the question of medical teaching in Dacca in Chapter XXXIII, which deals with the University of Dacca.

3. In offering criticisms and making recommendations, we desire to say at the outset that we regard the medical teaching of undergraduates in Calcutta, in so far as we have been able to judge from the evidence brought before us and from our own enquiries, as being generally in a sound and healthy condition, although we think certain changes and improvements desirable.

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[1] Chapter XXIII.

II.—Reorganisation of the teaching of the preliminary medical studies in the university course.

4. For reasons which we shall explain, we regard some reorganisation of the teaching of the preliminary medical sciences for the university course (chemistry, physics and biology), as necessary.[1] We have to consider first of all the question of general standards and regulations, and secondly, the question of the place or places where the teaching should be given, two questions which are inter-related.

5. As indicated elsewhere[2], we think that for the university as a whole (including the Faculty of Medicine) the entrance standard should be raised from the present matriculation standard to the present intermediate standard. But we can conceive of two objections to the change being raised on behalf of the medical students.

6. In the first place, it might be urged that the medical course is already a long one and that it should not be further prolonged. The answer is simple. A reference to the figures furnished by the Calcutta Medical College shows that no students at present enter the college before having passed an intermediate examination (not necessarily the I.Sc.) ; and that the Belgachia Medical College, although it has only been in existence for three years has promptly followed suit in this matter.[3] Students entering at the present matriculation stage have, in the past, proved too immature to follow the medical course with success. Lt. Col. Calvert informed us that, according to his experience, they failed in their examinations and blocked the way. Indeed the experience of the Calcutta Medical College is an additional argument for the general change which we propose.

7. A second objection that might be urged is that the change in the regulations would, or might, carry with it the discontinuance of an exemption granted to those who enter the medical colleges after having passed an intermediate examination in subjects common to that examination and the preliminary scientific examination

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[1] For the 'medical school' course, only physics and chemistry are required. We deal with this matter in paras. 50-52 below.

[2] Chapters XXXI and XXXII dealing with matriculation and intermediate colleges respectively.

[3] See Chapter XXIII, para. 42.

Such students are, under the present regulations, exempted from attendance at the course of study in those subjects, and from the theoretical examination in them, but not from the practical. But for two reasons—first, because the exemption is not a complete one in any subject, and, secondly, because no teaching of elementary zoology has been given outside the medical colleges, so that it could apply at most to only two out of the three subjects required—students have not, so we are informed, availed themselves of this exemption, but have pursued the preliminary scientific course at both the medical colleges as if the exemption did not exist. The lapse of the exemption under existing circumstances would therefore not be a cause of hardship.

8. It might however be further urged that the exemption should be continued and that steps should be taken to make it effective. What would this involve under the new system? Two things: first, the provision of the teaching of biology in one or more of the intermediate colleges, which we think would be excellent in itself; and, secondly, the acceptance of an examination in chemistry, physics and biology at the new university entrance examination, which we call the intermediate college examination, as exempting from the preliminary scientific examination. The difficulty of the exemption in practical work to which we have referred might easily be got over by making a practical examination in these subjects either necessary for all students, or for those who wished to avail themselves of the proposed exemption. But there would still remain two difficulties from the point of view of the Faculty of Medicine.

9. In considering the suggestion that the teaching of the preliminary subjects should be transferred from the Calcutta Medical College to new quarters (a point to which we shall return), Lt. Col. Calvert raised as a possible, though by no means an insuperable, difficulty that "the scientists are ... apt to insist on too high and too theoretical a standard."[1] Lt. Col. Sutherland also put forward an objection to the transfer proposed, but for somewhat different reasons. In his view, at Lahore, it is no longer possible in the science colleges to give medical considerations the first place in the F.Sc. (corresponding to the Calcutta intermediate) course, and the

[1] General Memoranda, page 197.

course does not cover sufficient ground for medical purposes. He therefore favours the teaching of the science subjects of the medical curriculum by medical men rather than by pure science professors.[1] Possibly Colonel Sutherland's criticism would be more likely to apply than that of Colonel Calvert to the teaching in the higher secondary schools which we term intermediate colleges. These colleges would be under a separate authority and the teaching would necessarily be still more out of touch with the Medical College, than teaching which, though carried on outside the walls of the Medical College, would be under the aegis of the University, and in close proximity to the College. We do not wish to pronounce judgment on this matter, which should, we think, be considered by the Faculty of Medicine.

10. The second difficulty arises out of the experience of universities generally. It is, we believe, the general, though not the universal, rule that these subjects must be studied subsequently to the entrance examination and at a more mature stage of development. We have suggested in Chapter XXXI[2] that a certain number of the intermediate colleges might provide the preliminary scientific courses required for the medical schools and for the medical colleges respectively. But we think that at first, at any rate, only a few students would be able at the stage of the intermediate college examination (which will be used as the university entrance examination) to attain the standard of knowledge required by the medical colleges, and so to shorten the present course by one year.

As in the case of the first difficulty we have discussed, we regard this second question as one which should be referred to the Faculty of Medicine for their opinion.

11. We now come to the question of accommodation in Calcutta. We regard the accommodation for the preliminary scientific course at the Calcutta Medical College as inadequate;[3] and we think the rooms now devoted to it could be more usefully employed for the later subjects of the curriculum. In so far as may be necessary, we think that provision for the training in the preliminary sciences, with special regard to the teaching of zoology, should be made, in consultation with the Faculty of Medicine, by the University

[1] General Memoranda, page 199.

[2] Paras. 31-32.

[3] See Chapter XXIII, para. 50 (*j*).

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and the colleges of the university in the Faculty of Science and in selected and approved intermediate colleges, capable of providing an adequate course for this purpose.

12. We may point out that our view on this matter coincides, approximately, with that expressed the by Public Services Commission who recommended that "efforts should be made to have the teaching in biology, chemistry and physics given through the various universities, wherever possible." [1]

13. Both Colonel Calvert and Colonel Sutherland pointed out that difficulties might occur if the control of the courses were handed over to the scientists (paragraph 9 above). We think it desirable to express our opinion that the curricula and regulations for these preliminary scientific courses, even if transferred as we suggest, should remain within the purview of the Faculty of Medicine; and that the actual organisation of the teaching should be supervised by a committee on which that Faculty would have strong representation. Under such conditions we think the difficulty in question would disappear. We may point out that in the majority of modern universities, such as Manchester, Leeds, Liverpool and Birmingham the teaching of the preliminary medical sciences is given, under conditions similar to those which we propose, by the teachers in the Faculties of Science.[2]

14. A minor difficulty pointed out by Colonel Calvert is the necessity of providing for the teaching not only of the university students but also of the 'military' students now taught at the Medical College. If new science laboratories were erected they might easily provide for these students as well as the others; and Colonel Calvert himself suggested that "they might suitably be taught in a military centre such as Lahore." We do not wish to offer any opinion in regard to this particular proposal. But in view of the overcrowding of the Calcutta Medical College, of the fact that the 'military' students come from all the provinces of India, and of the inconvenience of providing medical education of a higher and of a lower type in the same institution, we think it would be advisable, if possible, to provide for these students

[1] Report of Public Services Commission, Annexure XII, Recommendation XXXI, page 268.

[2] In the University of London there are eleven medical schools for the advanced portions of the curriculum, of which the majority do not give teaching in the preliminary medical subjects.

elsewhere than at the Medical College, with its limited space, on which there are so many claims which can only be properly met in Calcutta itself.

15. Although he put quite definitely the two difficulties which we have discussed, Colonel Calvert expressed the view that the preliminary medical sciences might be taught 'in the colleges'; and Sir Leonard Rogers (differing from Colonel Sutherland on this point) said :[1] "It is not necessary for a medical man to teach subjects such as zoology, biology and chemistry to medical students. Indeed, it might be better to have this preliminary scientific work conducted outside the Medical College." We think that we do not overstate the case when we say that the authorities of the Calcutta Medical College are generally favourable to the proposal to provide for the teaching of these subjects outside the college. Colonel Calvert suggested that the Presidency College, for example, might conveniently teach zoology, and open the classes to medical students; but a considerable extension of the Presidency College would be necessary if it had to provide a preliminary scientific course for a large number of medical students.

16. We desire to make it clear that whatever be the policy adopted in regard to the intermediate colleges discussed in paragraphs 5-10, the necessity will remain for the provision of teaching in the preliminary medical sciences for a considerable number of students in Calcutta. In the first place only a small number of the intermediate colleges, at most, would be able to provide the teaching required in zoology. Secondly, even under present conditions, by no means all of the future medical students pursue a scientific course before entering a medical college; and not a few of the medical profession are of opinion that it is to the advantage of a medical man (whose art requires a knowledge of human nature as well as of experimental and of medical science), to receive a sound training in the humanities before he enters on his professional studies. We think that a free choice in the selection of subjects of secondary education (consistently with any general rules adopted by the relevant authority) should be left to the individual student who desires to become a doctor. We are convinced that it would be a grave mistake to adopt any policy which would debar students who have followed a literary rather than a scientific curriculum

[1] General Memoranda, page 198.

in the intermediate colleges from pursuing a medical career. Nor indeed, in view of the precedents of western education, do we regard such a policy as conceivable.

17. In connexion with the provision for the teaching of the preliminary medical sciences, it will be well to bear in mind two other points. If our recommendations in regard to the teaching of agriculture are carried out, further provision for the teaching of chemistry, botany and zoology will be required for the students in agriculture, and it would probably be desirable to consider the requirements of the medical and the agricultural students together, with a view to economy both in buildings and staff, since much of the elementary teaching might be given in common;[1] and in the next place, special attention should be given to the development of research in zoology, a new subject in the University of Calcutta. By establishing a number of part-time teaching posts in the subject for promising junior men, on condition that their spare time was devoted to zoological research, the development of the subject would be greatly assisted.

III.—Further provision for undergraduate teaching, research and post-graduate instruction in Calcutta.

18. *Further provision for research in physiology.*—We recommend that greater provision should be made for research in physiology. The present laboratory accommodation, although adequate for investigations on food-values, such as the valuable investigations carried out by Major McCay, appears to us insufficient in comparison with that of the great laboratories in other universities; and especially with such laboratories as those recently erected at Lahore.

19. *Department or Institute of Public Health.*—We recommend that a Department or Institute of Public Health should be established approximately on the lines laid down by Dr. C. A. Bentley, Sanitary Commissioner with the Government of Bengal, in the valuable memorandum with which he has pəqsɪuɹnɟ us and which is printed in the Volume of Appendices to this report. We regard both the arguments quoted from the Royal Commission on the Public Services in India and those adduced by Dr. Bentley himself as very strong, and we trust that the department may be estab-

[1] See Chapter XLVII, para. 4, on this point.

lished with as little delay as possible. We desire to leave open the question whether the University should continue to award a diploma of public health as at present or whether it should substitute therefor an M.D. degree in that subject, like that of the University of London, or again whether it should institute a doctorate in addition to the present diploma. The question of degrees and diplomas is however entirely subsidiary to the provision of teaching and research in this subject. We desire to supplement the proposals of Dr. Bentley by suggesting that the department or institute should provide not only lecture-rooms and laboratories for teaching purposes, but also one or more research laboratories for the various branches of work with which it will be concerned. We understand that an 80-foot extension of the buildings of the School of Tropical Medicine has already been sanctioned for an institute such as we propose. In so far as position is concerned we think the proposal excellent, but we have not had the opportunity of seeing the plans or considering questions of detail in connexion therewith.

20. *Teaching of bacteriology.*—In many universities there are now special institutes or departments of bacteriology. We understand that a large amount of space is, or will in future be, devoted to this subject in the departments of pathology, tropical medicine and public health. We hope that the staff employed may be able to assist these departments outside the Faculty of Medicine for which bacteriology is of importance, and of which we propose the establishment, *i.e.*, the departments of agriculture and of leather-making; at any rate in their initial stages, before specialist teachers in this subject can be provided.

21. *Proposed chairs of pharmacology and of the history of medicine.*—We recommend further the establishment of a chair and laboratory of pharmacology, and of a chair of the history of medicine.

The chair of pharmacology should, we think, be provided by the Government in connexion with the Calcutta Medical College. At the present moment there is a chair of materia medica which is held jointly with the chair of clinical medicine. It would be suitable in future to relieve the professor of clinical medicine of the subject of materia medica and to unite that subject with the chair of pharmacology. We think the chair of the history of medicine should,

if possible, be established by private benevolence and should be a university chair attached to the Calcutta Medical College; and the lectures, or at any rate certain courses, should be open to the general public. We have in Chapter XXXIV, paragraphs 112—120, explained the procedure which we regard as suitable for the selection of occupants of university chairs tenable at a particular college, and we think this method should be used in connexion with the chair of the history of medicine.

22. *Use of the above-named chairs for investigations in connexion with the Ayurvedic and Unani systems.*—The chairs of pharmacology and of the history of medicine are desirable on general grounds; but they are also desirable because it is in connexion with their teaching that effect should be given to the demand, fully justified, that the ancient systems of Indian medicine should receive attention by the University of Calcutta.[1]

23. *The University cannot train students in the Ayurvedic and Unani systems.*—It is clearly impossible that we should ask the University to undertake to train students on systems which ignore what has been done in science and medicine for centuries, although they have preserved valuable knowledge. As Sir Sankaran Nair, the Member for Education, pointed out in a speech of March 24th, 1918, at the Ayurvedic and Unani Tibbi College at Delhi, the study of modern sciences is indispensable for medicine.

24. His Excellency Lord Pentland struck the same note in a speech recently delivered at the opening of an Ayurvedic hospital in the Cochin State.[2]

"Medicine," he said, "whether it be called Ayurvedic, Unani or western, must follow the same methods and the same aims and submit to the same tests; .... any system of medicine must be correlated with every advance in the allied sciences such as chemistry and physiology."

Lord Pentland further pointed out the necessity for examining and standardising the drugs used in the indigenous systems.

25. There is an obvious and promising desire at the present moment among the numerous adherents of these systems for closer touch with modern scientific methods. In time no doubt they will be able to make available for the practitioners of western medicine the traditional knowledge which is of real value; and will reject, as

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[1] See also Chapter XLII, on Oriental Studies, paras. 6-8.

[2] Reported in the *Indian Medical Gazette* for March 1918.

western medicine continually rejects, those theories which are mere survivals, and cannot stand the test of experience. The distinction between Indian and western 'systems' of medicine will then disappear.

26. *Chair of pharmacology and materia medica.*—Although pharmacology figures as a subject of the university curriculum there is no professor of pharmacology in Calcutta, nor we believe, elsewhere in India. It is only right however to point out that pharmacological investigations of the first importance, on emetin and other substances, have been carried out in the pathological department by Sir Leonard Rogers. But the subject is one which should be provided with a separate department, similar to the departments in London, Cambridge, Edinburgh and other universities, and in such a department it would be fitting that a systematic investigation should be undertaken of the drugs used in the Ayurvedic and Unani systems, as well as of the other drugs furnished by the immense variety of the natural products of India. As pointed out in paragraph 21, we think that the subject of materia medica should be detached from the chair of clinical medicine and should be dealt with by the professor of pharmacology.

27. *Chair of the history of medicine.*—The chair of the history of medicine of which we propose the establishment should deal not only with the history of medicine in India, but with the history of medicine generally, and we think it essential that it should be held by a qualified medical man. It is only in the light of modern medicine that ancient systems of medicine can be judged in their true perspective and relationships. The subject is one of importance not only for medicine but for the history of science and civilisation generally. In a number of European universities, notably the University of Paris, there is a chair of the history of medicine; and there is a growing sense of the necessity, in these days of specialisation, of establishing teaching which shall give to the specialist a wider view of his subject. Sir William Osler, the Regius Professor of Medicine in the University of Oxford, has drawn attention to this aspect of the matter in his interesting preface to the recently published Studies in the History and Method of Science, edited by Dr. Charles Singer,[1] which deals largely with the history of medicine. We hope that private generosity may furnish at an

[1] Published by the Clarendon Press, 1917.

early date the funds for the establishment of such a chair as we suggest.

28. *Chair of mental diseases.*—We understand that at the present moment there is no specialist teacher of mental diseases in the Calcutta Medical College; and that the subject falls as part of his ordinary duties to the second resident medical officer of the Presidency General Hospital. We think that a specialist chair should be created in this subject, and that the province should not be dependent on other provinces for specialist advice in it.

29. *Chair of dermatology and syphilology.*—At present there is no special department either for skin diseases or for venereal diseases. We would urge the public importance of providing departments in these subjects in connexion with a chair which might be called the chair of dermatology and syphilology, or such other equivalent title as might be judged suitable. If steps are taken in India to correspond with those recently taken in England as a result of the report of the Royal Commission on Venereal Diseases, the establishment of a department such as we propose will become urgently necessary. In any case, we have no hesitation in recommending its establishment on general grounds of public interest.

30. *Chair of diseases of the ear, nose and throat.*—We think that the Calcutta Medical College ought to possess a department for diseases of the ear, nose and throat, diseases which cannot be considered as of less importance than those of the eye, for which provision is already made. We may point out the increasing significance attached to those preventible diseases of the nose and throat in children which lead to defective breathing and are now generally recognised as checking physical and mental development in a very large number of cases.

31. *Lectureship on X-rays.*—We suggest that a special lectureship should be established in connexion with the Department for X-rays in the Calcutta Medical College. It seems unnecessary to advance any arguments in respect of this proposal.

32. *Lectureship in electro-therapy.*—We also recommend the establishment in the college of a lectureship in electro-therapy, which has now become a well recognised department of medicine.

33. *School of dentistry.*—We recommend that a department of dentistry should be established in connexion with the Calcutta Medical College. The fact that there is no dental school or hospital

and no means of giving dental training in India is remarkable. It is a defect which should be remedied at the earliest opportunity. We have no doubt that there would be a fair opening for properly qualified dentists.

We are not prepared to recommend the establishment of a dental degree in the University in the first instance. Although many American and some British universities have established degrees in dental surgery, the vast majority of practitioners in Great Britain take a dental diploma.

34. *Fellowships or studentships for medical research.*—We think it unlikely that medical research will flourish in Calcutta without the establishment of research fellowships or studentships. We would draw attention in this connexion to the valuable Beit Research Fellowships founded in Great Britain by the generosity of a private donor, Mr. Otto Beit at a cost of about £215,000. A fraction of that sum in India so applied would render immense services to medicine and to the community.

35. *Post-graduate teaching in medicine.*—We desire to call attention to the almost complete absence of post-graduate medical teaching in Calcutta[1] and recommend that steps be taken to institute such teaching and to make further provision for medical research in the University. We have no doubt that the School of Tropical Medicine will, not only by carrying out research, but by example, powerfully contribute to the establishment of post-graduate work and research in other departments.

36. It would be greatly to the advantage of practitioners if post-graduate courses, both clinical and theoretical, were offered in connexion with the Calcutta Medical College and its hospitals, in connexion with the Belgachia Medical College and its hospitals, and in connexion with other hospitals in Calcutta.

IV.—University medical organisation.

37. We now turn to the question of university organisation. We shall not repeat here our views in regard to the general principles of academic organisation which we have dealt with in Chapters XXXIV and XXXVII[2]; we may however point out that in the case of

[1] Chapter XXIII, para. 48.

[2] See especially Chapter XXXVII, on the Constitution of the University of Calcutta, paras. 58—71.

professional subjects like medicine (as well as law and engineering) we think it desirable that outside professional experience should be represented on academic bodies belonging to those categories which in the case of non-professional subjects should consist wholly of teachers. We also recommend that when a medical teacher who is a member of one of the academic bodies is given long leave, steps should be taken to replace him during such leave by a deputy. It might be convenient that he should be replaced by different persons on different bodies. Thus if a professor of physiology were given leave he should obviously be replaced by the officiating professor of physiology on the Faculty of Medicine and on such boards of studies as a board of studies in physiology, or a board of intermediate medical studies; but if he were a member of the Academic Council, the Faculty should be given the option of electing another person to act during his absence, as a general knowledge of university affairs is required for such membership which might not be possessed by a deputy.

38. The admission of the Belgachia College as an affiliated college in medicine will make it impossible under the existing examination regulations to give the same position to all the teachers in the conduct of examinations which they have held hitherto, and which, we think, has worked satisfactorily in the past. We do not propose any modification of these particular regulations, as we deal with the constitution of boards of examiners generally in Chapter XL, paragraphs 3—12. We regard the principles on which the existing regulations for the conduct of medical examinations are based as generally satisfactory. The system of conducting these examinations by means of internal and external examiners, acting jointly, should be continued.

V.—Administration of the Calcutta Medical College.

39. The internal administration of the Calcutta Medical College, the chief medical teaching institution in the province, is a matter of great importance.

40. *Council of the Calcutta Medical College.*—We think it desirable that the Council of the Medical College should meet regularly during term time in order to discuss the work of the college. At the present moment the Council is said scarcely to exist except in name.[1] However capable the principal of a college may be we

[1] Chapter XXIII, para. 50(*l*).

think it desirable that he should have not only the individual, but the corporate, advice of his colleagues, especially in an institution for which he is solely responsible. The regulations provide that the Council of the college shall take cognisance of all matters which in any way concern the constitution and work of the college and the welfare of the students attached thereto, and further that any proposal involving any change in the prescribed course of instruction or in the general management of the college or hospital in educational matters which the principal may desire to submit for the sanction of superior authority shall be laid before a meeting of the Council for discussion before being so submitted, and that the principal, when forwarding his own proposal, shall forward also any resolution which may be come to on the subject by the meeting. It seems clear to us that an institution containing over a thousand students, if it is to be living and progressive, needs the attention of the teaching staff as a corporate body. At the present moment, as the principal has pointed out, the activities of the college are confined mainly to routine undergraduate work. But this is not as it should be. With the development of new work in various directions to which we look forward the active co-operation of the staff in the conduct of the school will be more than ever necessary.

41. *Position of the principal of the Calcutta Medical College.*— The principal of the Medical College, Colonel Calvert, drew our attention to the extraordinarily onerous duties which now devolve on the principal of the college.[1] Colonel Calvert is now on the point of retirement, so that any relief given to the principal will not affect him personally, and we desire to say that we have received testimony as to the great efficiency with which he has carried out his duties. But those duties are too much to place on any one man. Both Colonel Calvert[2] and Sir Leonard Rogers[3] have suggested that the principal should be given a salary adequate to make it unnecessary for him to take consulting practice. Sir Leonard thinks he should be debarred from taking such practice; and also suggests that it is unwise to attach the principalship solely to the professorship of medicine. We do not wish to prescribe the exact method by which the duties of the principal

[1] Chapter XXIII, para. 50(*m*).

[2] General Memoranda, page 197.

[3] *Ibid.*, page 198.

should be lightened. But it is clear to us that the duties of the head of a large teaching institution of a university standard—and that is the matter which concerns us most immediately—are inconsistent with the fulfilment of all the other duties and work which now devolve on the principal of the Medical College.

42. *Recruitment of the staff of the Calcutta Medical College.*—In regard to the general question of recruitment of the staff of the college, we desire to quote the following important passages from the report of the Public Services Commission[1]:—

"*Methods of recruitment. Extent to which the professorships and the connected appointments should be thrown open to outside competition.*—At present, as has already been noted, the professorships are reserved almost entirely for officers of the Indian Medical Service. Strong objection was taken to this system by certain private practitioners on the ground that such officers had not the necessary qualifications for the task of instructing the young men of the country. But this position, though advanced strongly by certain witnesses in their written statements, was not maintained by them in its entirety in their oral examinations. We are satisfied that, viewing the question broadly, the qualifications of the present officers are fairly good, whilst there is no question but that several of them are distinguished specialists in their subjects and thoroughly efficient teachers. At the same time there are indications that the number of applicants is limited, and that the supply of those with suitable qualifications is unduly restricted. This is especially marked in the case of the scientific as opposed to the clinical chairs. It was also shown that transfers of officers from clinical to scientific chairs and *vice versâ* were not infrequent, and that this was detrimental to efficiency. All this points to the desirability of extending the present field of selection. At the same time it is obvious that the great experience accumulated in their ordinary course of practice is in a special degree calculated to fit officers of the civil medical services for the highest forms of clinical teaching; and, since the clinical chairs can always be well filled by members of the Government services, the cause of medical education has little, if anything, to gain from opening them to the general public. On the other hand there would be a distinct loss to medical progress were such a course adopted, since the assurance that these chairs are reserved to the services is one of the most powerful attractions for men of scientific tastes and aptitudes. We accordingly recommend that the clinical chairs of medicine, surgery, clinical surgery, ophthalmology and midwifery, and their connected posts, be reserved, for so long as a fit person is available, for officers of the civil medical services, however recruited. The scientific chairs of physiology, pathology, anatomy, materia medica (or pharmacology) and biology on the other hand, and their connected posts should be thrown open to all comers, and officers of the civil medical services should compete for them on the same terms as the general public. . . We also advise that once an officer has specialised in a clinical or scientific subject, or in

[1] Report of Public Services Commission, Annexure XII, paras. 33—36, pages 259—260. We have omitted only such portions of the text as are either irrelevant to the subject of college service, or the conditions of Bengal, or are quoted elsewhere.

chemistry, or in the duties of an alienist, he should be kept to this class of work. For example, a teacher in one of the clinical subjects should be eligible for any appointment in the clinical group for which he may be fitted. He should only in the rarest instances be allowed to teach in the scientific subjects, and *vice versâ*.

Methods of recruitment. Desirability of an all-India field of selection for the professorships, chemical examinerships and the alienist appointments.—At present appointments to the higher teaching posts are made by the local Governments concerned, subject to the approval in all cases except those of Madras and Bombay, of the Government of India. ..... We sympathise to the full with the desire for local autonomy, and have kept this in view throughout our proposals. We think, however, that it can be pushed too far, and that for specialist appointments the widest possible field of recruitment is essential. We would, therefore, whilst leaving the actual appointments to the local Governments as before, require that they should be made everywhere after reference to, and with the approval of, the Government of India.

Methods of recruitment. Procedure to be adopted in making appointments to the professorships, chemical examinerships and alienist posts.—In making their higher teaching appointments local Governments now depend for expert advice on the surgeon-general or inspector-general of civil hospitals, and the Government of India on the director-general. For appointments not of professorial standing this is suitable. For professorial appointments we advise as for other services that the machinery of a committee should be utilised, though we recognise that in certain cases these bodies may find it necessary to conduct their deliberations in part by correspondence. In the case of the appointments not reserved for members of the civil medical services the committee should consist of five persons, not more than two of whom should be members of the Indian Medical Service, and at least two of whom should be from the province to which the appointment to be made is attached. The University of the province concerned should be represented on the committee, and at least one member should be an Indian. The director-general, when present, should be chairman of the committee *ex-officio*. ..... For the appointments reserved for members of the civil medical services a smaller committee of a more official character will be suitable, and for this purpose the director-general, the surgeon-general or inspector-general of the province concerned, and the principal of the medical college to which the professorship is attached will suffice. All appointments not reserved for members of the civil medical services should be advertised in the first instance in India, and only if no fit person, whether an officer of Government or a private individual, is found there, should application be made to the Secretary of State in England. In the event of its being necessary to make a selection in England the Secretary of State should make his choice after advertising the vacancy and taking the advice of a selection committee constituted for the purpose. In the case of the reserved appointments selection should be made from a list of applicants to be maintained by the director-general.

Systems of probation and training.—All officers of Government appointed to fill professorships ..... will have been through a period of probation and general training. All that is required in this connection is that the Government should not confirm them in their specialist appointments before they

have shown their fitness for specialist work, and as teachers, where they are required to teach, over a period of two years. A similar procedure should be followed in the case of the direct appointment of outside candidates. Once an officer has been confirmed he should not ordinarily be allowed to revert to the regular line. The same procedure should hold good in the case of officers holding the connected posts of minor importance."

43. *Question of undertaking of general practice by the staff of the Calcutta Medical College.*—We agree with Sir Leonard Rogers[1] that specialist members of the staff should be required by Government regulations not to undertake the work of general practitioners, and we think that the holders of the scientific chairs should not be allowed to undertake any medical practice, but should receive adequate compensation for the loss of such practice.

The Public Services Commission[2] deal with these two points in the following passage, in which we concur :—

"*Conditions of salary. Private practice of professors* ..... .—At present no clear principle appears to be laid down as to which professors should be allowed permission to take fees for private practice. The privileges of the existing incumbents in this respect should be maintained. In the case of all future incumbents we recommend that the holders of what we have termed the scientific posts should be debarred from private practice ; but, if they are medical practitioners they should be given a monthly allowance instead, to be determined by Government in accordance with local conditions. The officers holding the clinical posts, on the other hand, should be allowed private practice, but this should be restricted to consulting practice in their own subject, the term consulting practice being interpreted in the sense understood by London practitioners."

The term 'scientific chairs' should include the chairs in physiology, anatomy, pathology and pharmacology. We do not include the subjects of chemistry, physics and biology because, as we have explained, we think these subjects should be dealt with in the Faculty of Science and not in the Faculty of Medicine. We do not think the professor of pathology should be debarred from making laboratory examinations of clinical material submitted to him for investigation.

44. It is only incidentally and in connexion with the Calcutta Medical College that our reference relates to the Indian Medical Service ; but our attention has been directed to the fact that there exists in the service considerable dissatisfaction with the present conditions, and a deputation on the subject was received in London

[1] General Memoranda, page 198.

[2] *Loc. cit.*, para. 37, page 260.

on June 27th, 1918, by the Secretary of State, who endorsed the view that "the Indian Medical Service can be regarded as the pivot upon which all other Imperial Services depend."[1] We trust that our recommendations, if carried out, will not diminish in any way the attractions of the service and we think that if they did so, the attractions of the service should be increased in other ways in order to compensate for any loss so suffered. We understand that a committee has just been appointed to report on the Indian Medical Services.

VI.—The Belgachia Medical College.

45. We have in Chapter XXIII (paragraph 51) given an account of the recently created Belgachia Medical College. We hope that its progress may be such as to justify its affiliation to the University of Calcutta up to the degree stage at an early date; and that on the reconstruction of the University it may be able to comply with the conditions for admission as a constituent college. We may point out as one of those conditions not at present fulfilled that the teaching staff should be represented by two of its members on the Governing Body in addition to the principal.

VII.—The Medical schools and the question of further provision for the needs of rural districts.

46. We have dealt separately with the Dacca Medical School in Chapter XXXIII, but we desire to make here certain observations in regard to the subject of the medical schools generally. We have referred in Part I to the debate in the Imperial Legislative Council of 9th March 1916 on medical education and to the proposal put forward by the Bengal Council of Medical Registration that the demand for medical men in the rural areas ought to be met by an expansion of the kind of education given in the medical schools.[2] This proposal constitutes a *via media* between the proposal of Dr. M. N. Banerjee to provide a medical training in the vernacular, and the proposals made by some witnesses that, in order to meet rural needs, the opportunities for medical education of a university standard should be expanded.

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[1] Report in the supplement to the British Medical Journal for July 6th, 1918.

[2] Chapter XXIII, paras. 20—28.

47. As shown in Chapter XXIII, various attempts have been made by Government since 1823 to provide vernacular education in medicine. They have all resulted in failure. Doubtless the number of medical text-books in Bengali far exceeds the number formerly available and thus one obstacle to vernacular education has been diminished. But if it is true that an English medical man regards it as a serious handicap to be unable to read French and German, it would be an infinitely more serious handicap for a Bengali practitioner to be unable to read English; and we cannot endorse the proposal that a fresh scheme for vernacular medical education should be started.

48. In regard to the question of a considerable increase of the output of medical graduates we have before us the weighty opinion of the late Sir Pardey Lukis, Director-General of the Indian Medical Service, referred to in Chapter XXIII, paragraph 26.

We have made enquiries in regard to the concentration of medical graduates in towns and find that the opinion expressed by Sir Pardey Lukis is confirmed by other authorities.[1] But we believe

[1] The following statistics for March 1919 have been furnished to us by the Secretary of the Bengal Council of Medical Registration :—

—	Number practising in Calcutta.	Number practising in Bengal outside Calcutta and in Bihar and Orissa.	Number engaged on special estates (tea-gardens, jute-mills, coal-fields, etc.).	Number practising in Assam.	TOTAL.
Holders of English medical degrees .	76	43	..	..	119
Holders of Indian medical degrees or licences qualifying for the rank of assistant surgeon.	433	435	11	1	880
Registered practitioners of the sub-assistant surgeon class.	211	1,633	69	22	1,935
TOTAL .	720	2,111	80	23	2,934

In round figures the population of Calcutta may be taken as one million; the population of the rest of Bengal outside Calcutta and of Bihar and Orissa as 79 millions. Leaving out of account the holders of English medical degrees, and the small number of medical men employed 'on special estates,' (tea-gardens, jute-mills, coal-fields, etc.) we see that there is one medical graduate or qualified practitioner of the 'assistant surgeon' class for every 2,300 persons in Calcutta, and only one for every 181,000 persons outside Calcutta. Of the sub-assistant surgeon class there is one for every 4,700 persons in Calcutta, and one for every 48,000 persons outside Calcutta. The region 'outside Calcutta' includes Dacca and the other towns of Bengal, and Patna and the other towns of Bihar and Orissa. The number of registered practitioners (of both classes) is one for 1,550 persons in Calcutta and one for 38,000 for Bengal outside Calcutta and Bihar and Orissa.

that, as we have suggested in Part I, there should be increasing opportunities in the country for qualified medical practitioners and we hope that the local authorities, such as District Boards and co-operative societies, may unite in securing the services of medical men who would be unable to earn a certain living in the mufassal without some guarantee such as these bodies could offer.

49. The medical schools, with their modest requirement of the present matriculation examination as the entrance test, and their four years course would provide one of the types of practitioner wanted.[1] We sincerely hope, therefore, that the recommendation of the Bengal Council of Medical Registration for the extension of the medical schools may be adopted. If and when the Dacca Medical School is converted into a medical college, it will be necessary to set up another school at Dacca or elsewhere in place of the existing school. We are glad to learn that the establishment of a medical school at Burdwan has been sanctioned.

50. It will be remembered that at Dacca the teaching in physics and chemistry which forms part of the school course is now provided not by the school itself but by the junior department of Dacca College. This suggests another field of activity for the intermediate colleges, which will correspond to the junior departments of the existing colleges. We think that the training they give in physics and chemistry might be quite suitably accepted as part of the medical school course. The course is necessarily of an elementary character and cannot be specialised to conform to medical requirements in the same way as the preliminary scientific course of the University, taken at a more mature age,[2] but there should be some provision to allow of communication between the authorities of the medical schools and the Board of Secondary Intermediate Education[3] on the subject of these courses, so that they may be adapted to the requirements of the schools in so far as this is possible

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[1] It is to be remembered that as the present college course extends over six years, and starts *de facto* from the intermediate stage, it really is not ended until a minimum period of eight years from the present matriculation stage, while the medical school course for all but a few students is one of only four years from the matriculation stage [see Chapter XXIII, para. 50(c)]. It is interesting to note that the Agra Medical School has converted its four years' course into a five years' course.

[2] In practice, though not by prescription. See para. 6 above.

[3] See Chapter XXXI, paras. 20-45 and Chapter XXXII, paras. 31-32.

without sacrificing the interests of the other pupils for whom the intermediate colleges will provide.

51. The Campbell Medical School in Calcutta depends on the Calcutta Medical College for the provision of the teaching it needs in physics and chemistry; but Colonel R. P. Wilson, then superintendent of the school, said in his evidence[1] that he hoped the Campbell School would soon have its own staff and laboratories for training in these two subjects. The fact that chemistry and physics are taken concurrently at the medical schools with anatomy, physiology and materia medica no doubt makes it inconvenient to send the students to a distance for teaching in the two first named subjects.

52. We understand that a certain number of those who have taken the recently established licentiateship of the State Medical Faculty of Bengal (the diploma ordinarily taken by the students of the medical schools) desire to proceed to the higher diploma, the membership diploma, of that Faculty. Under the regulations of the Faculty one of the requirements for such a candidate is that he must pass the preliminary scientific examination for the membership which includes not only chemistry and physics but also biology, thus entailing an additional year's elementary work on the already qualified practitioner besides the additional year of purely medical work also required under the regulations of the Faculty. We desire to make the suggestion that if a suitable course in physics, chemistry and biology were provided in the intermediate colleges followed by a corresponding examination, and if such course and examination were recognised by the State Faculty of Medicine as exempting from the requirements in respect of the preliminary subjects both for the licentiateship and for the membership of that Faculty a certain number of students would avail themselves with advantage of this exemption. It is true that this procedure would at the outset delay the commencement of their medical studies by two years, this being the length of the intermediate college course; but they would save a year's work at a later period and the irksome return to elementary studies after obtaining their medical qualification; and they would also enter the profession equipped with a better general education, which would stand them in good stead throughout their career.

[1] General Memoranda, page 200.

CHAPTER XLV.

Legal Education.[1]

I.—Enumeration of fundamental points.

1. Our survey[2] of the present condition of legal education within the jurisdiction of the University of Calcutta and of the notable improvements which have been effected in this department in recent years, makes it clear that the authorities realise the paramount need for adequate preparation for admission to the ranks of the legal profession. In view of the evidence thus furnished of a steady activity in the direction of better vocational preparedness, it is hardly necessary that we should insist upon further immediate improvements with the same emphasis as we have felt it incumbent on us to urge in other spheres of educational activity. At the same time, we cannot overlook that there have been advocates, here as elsewhere, of the theory that the practice of the law is a mode of earning a livelihood, that the profession should consequently be open to all persons of average ability and good morals, and that it is from this point of view unfair to exact strict requirements of preliminary education and technical training. There is a persistent tendency to overlook the important principle that the State creates lawyers, not so much for their own benefit as individuals as for the benefit of the State. It has thus become increasingly difficult to secure adherence to the guild ideal, the ideal of the merger of the personal life of the individual in the larger life of the community, the ideal of service rather than that of profit. The true issue is sometimes obscured by the occasional pre-eminent success, in the profession, of men who have lacked the requisite training; it is, indeed, overlooked that men who are not prepared may become good lawyers, but that if they do so, it is because of their natural mental capacity and the education that they give themselves afterwards in their career, and

[1] This chapter deals with legal education in Calcutta. Legal studies in Dacca are dealt with in Chapter XXXIII.

[2] Chapter XXII.

not because of the imperfect education they may have acquired in their earlier years. The point can never be too insistently laboured that "the law is neither a trade nor a solemn jugglery but a science"; this is the root of the matter which too many things in common practice conspire to obscure. It is consequently essential that two fundamental points should be emphasised namely, first the need for adequate requirements of preliminary general education, and, secondly, the no less vital need for thorough training in the fundamental principles of the subject spread over a fairly long period of time.

2. As regards the *first* point, a reference may be made to the opinion of ex-President Taft, who, in addressing the Association of American Law Schools at the Montreal meeting in 1913, observed that "the more thorough the general education of one who proposes to be a lawyer, the more certainly will his mind be disciplined to possess himself of the principles of law and properly to apply them." In this respect, the University of Calcutta has, ever since its foundation, uniformly maintained the position that a degree in law should be open to no one who had not previously taken a degree in arts or science and had thus afforded evidence of that minimum of general education which would enable the lawyer to deal properly with the social and economic questions often indirectly involved in the decision of the legal problems committed to our courts. We are emphatically of opinion that the policy pursued by the University on this subject has been wise and should be strictly maintained. We refer to this point, because a spirit of hostility is sometimes manifested as well by lawyers as by laymen towards the proposition that a broad general education is necessary to the making of a qualified member of the legal profession. This opposition is likely to gather strength when effect is given to our recommendation for the improvement of secondary schools as also of the training imparted at the undergraduate stage. We consider that it would be lamentable, if by reason of the elevation of the standard at the intermediate stage and of the increase in the length of the period of study requisite for a degree in arts or science, the suggestion were to meet with favour that legal studies might be safely undertaken by students at an earlier stage of their career than is now permitted. It would not be a matter for surprise if such a view were attempted to be supported by a paraphrase of the famous argument: "Look at Abraham Lincoln! He had little formal

education of any sort; practically he educated himself; and note his greatness as a lawyer, as a statesman and as a man." It does not require much acuteness to expose the fallacy which vitiates this specious argument, even if it were based upon solid fact; it will be remembered how much Lincoln owed to a gifted teacher and how strong was his feeling of gratitude towards that teacher for influencing his life. Such an argument would in fact prove too much; it would sweep away the necessity not merely for preliminary education and professional training but also for schools and colleges of all kinds. The question is not whether exceptional men have made themselves learned men, educated men and great lawyers without the use of schools, colleges and academies, general and professional; but the question is, by what means are we likely to produce the average efficient members of the profession, to make them skilled and able and useful in the office for which the profession has been created. We are clearly of opinion that the requirement of a sound and thorough collegiate education, such as is or should be implied in the possession of a university degree in arts or science, must be insisted upon, in the case of all persons before they begin the study of law. No serious weight can be attached to the argument that if the standards of training and of examinations in the Faculties of Arts and Science are made more and more exacting, the view we advocate may operate harshly upon some young aspirants for admission to the legal profession. For if the reason of the existence of the profession is to serve society, the interest of society is the standpoint from which we must approach the question, and little consideration should be given to the welfare or convenience of those who would like to practise law though not fitted to practise it well. After all, graduates in the Faculties of Arts and Science are more than sufficient to supply the needs of the legal profession, and there is no danger that there will be any dearth of lawyers of good material because a heavier burden of preliminary preparation is required of them. Indeed, except to people saturated with the view that the profession exists solely as a livelihood, it is by no means difficult to bring home the fundamental truth that a broad collegiate education must be deemed an essential pre-requisite before the study of law is commenced.

3. As regards the *second* point, the most recent judgment of the University, based on the experience of over half a century, has been pronounced, as we have already seen, in favour of the three years'

curse. This is in accord with the trend of the best modern opinion and is amply justified by the peculiar circumstances of the Indian students of law. It is not necessary for our present purpose to review the stages through which the controversy relating to the proper length of a course of law study has passed in various universities; a lucid summary is contained in the admirable reviews of the progress of legal education which form part of the annual reports of the Commissioner of Education of the United States.[1] It is sufficient to state that there has everywhere been a gratifying advance, not merely in the way of increase in entrance requirements but also in respect of the length of the period of study. A three years' course is now prescribed by most law schools of standing and repute in the United States, which also require a degree in arts as an essential pre-requisite for admission. The tendency in quite recent years has, indeed, been in the direction of a further advance; and it is stated that there is a growing feeling on the part of law teachers that the course should if possible be increased to four years, though only a few years ago a suggestion that this might be attempted was received with disapprobation, if not with derision. We do not advocate that the course of legal study in this country should at once be extended from three to four years. There are obvious objections to such a course. But although we refrain from recommending an extension of the period of law study, we desire to make it clear that we do not advocate any reduction and that we do not regard the proposed extension of the B.A. and B.Sc. courses by one year as justifying a shortening of the courses of legal studies. The elementary truth that the process of assimilation of new ideas requires the lapse of adequate time cannot be too strongly emphasised. Assume that a student is able fairly to master the present course in three years, if he devotes four hours a day to his work; it would be a mistake to apply the rule of proportion and to infer that he could achieve the same result equally effectively in one year, if he devoted 12 hours a day to the study of the subject. Then, again, the Indian student stands in a position of peculiar embarrassment, by reason of the unusual complexity of the law he is called upon to master. He must, for obvious reasons, acquire a tolerable familiarity with the two great indigenous systems of Hindu and Muslim law; he must in addi-

[1] See in particular the reports for 1890, 1893 and 1914.

tion acquaint himself with the chief contributions of ever-active legislatures, Imperial as well as Provincial, to the statute book in the domain of civil, criminal and revenue laws. For a rational apprehension of these legislative products, it is essential that the student should have some insight into the principles of English equity and common law; and if he wishes to be a scholarly lawyer, he must also possess a thorough grasp of the leading principles of Roman law and modern jurisprudence. Finally, he cannot, without peril, keep himself entirely ignorant of the fundamental principles of procedure, as his degree in law is the sole passport to the practice of his profession. A course so complex and so varied cannot be satisfactorily comprehended by the average student, even in its outlines, in less than three years. We must further remember that the great expansion of the law in recent times and the increasingly insistent demand from the laity for a higher degree of professional efficiency point to the conclusion that the length of the law course, if not extended, should at any rate be not curtailed. To avoid misapprehension, it may be added that this increase in the volume of law is not pure accumulation; for while the old principles of justice may always endure, the new conditions in modern society constantly call for novel applications, varied modifications and unforeseen developments. As a result, we have extensive fields of law which are to all intents new, and these must be explored, if not by all, at any rate by the more ambitious students who aspire to become fully competent lawyers. Our conclusion is thus definite that it is as necessary to maintain the length of the course as to insist upon adequate preliminary general training. We do not hesitate to add that it should be the solicitude of all who are genuinely interested in the promotion of education in this country, to maintain at the highest attainable level the efficiency of the profession of law, which was eloquently described to be "as ancient as justice and as noble as virtue itself" by the great French jurist D'Aguesseau, who added, however, a significant warning: "it concerns too closely the fortune, the honour, and the life itself of citizens to be left neglected; those whose purpose it is to practise it, ought to be held to make proof of their studies, of their capacity, of their good morals, and of their probity." A depreciation of the standard of legal education would be disastrous; for the inevitable tendency would be to create a class of people, who with cunning rather than with skill might

exercise a sordid and pernicious trade and thus ultimately draw upon themselves the opprobrious epithets applied by the historian of the decline and fall of the Roman Empire to the lawyers of a decadent age, " Careless of fame and of justice, they are described for the most part as ignorant and rapacious guides who conducted their clients through a maze of expense, of delay and of disappointment, from whence, after a tedious series of years, they were at length dismissed, when their patience and fortune were almost exhausted."[1]

II.—Deficiencies in the present system.

4. In our enquiry into the adequacy or otherwise of the provision made in this department of the University, we thus start with the position that alterations should not at present be made either as regards the requirement of preliminary education or the length of the period of law study. From this standpoint, the fact which strikes the observer most forcibly in the University Law College is the lack of suitable accommodation. The number of students on the rolls of the college has exceeded 2,000 for some years past, and during the present session the figures for the different classes almost reach an aggregate of 2,400—an assemblage of students large enough to constitute a university by themselves, judged by standards of size which prevail in some of the universities of the West. We see no prospect of immediate and substantial reduction in these figures. The legal profession in this country is, upon the testimony of competent observers, indisputably overcrowded; but unless other attractive avenues are thrown open to young men, such as we venture to hope may result from the adoption of our proposals regarding the foundation of intermediate colleges of a new type and the systematic development of facilities for vocational training on an extensive scale, no early diminution of the number of students can be reasonably anticipated. On the other hand, it is within the bounds of possibility that administrative changes of a fundamental character, such as have been recently foreshadowed, may induce young men of ability and culture to undertake, in an even increasing degree, the serious study of special branches of law with a view to qualify themselves adequately for the new duties of public life which they may be called upon before

[1] Gibbon's *Decline and Fall of the Roman Empire*, Chapter XVII.

long to discharge. It is, therefore, imperatively necessary that the University should be able, if the occasion should arise, to reorganise the department of legal studies on an adequate basis. This accentuates the need for suitable buildings on the fish market site at a very early date, so that the undoubted congestion in the Darbangha building may be relieved. What is true of the post-graduate classes in this respect is equally true of the classes in the University Law College; it is undeniable that, for the proper working of each of these departments, many more rooms than are now available are required for use as lecture halls, class-rooms and seminars.

5. The second defect which impressed us was the inadequacy of the arrangements for the advanced teaching of law. The college has hitherto devoted its resources almost entirely to the instruction of students for the degree of bachelor of law. This, it may be conceded, was inevitable, in view of the lamentable condition into which legal education in Bengal had drifted for nearly two generations. But the time has arrived when further developments can no longer be justly delayed. An attempt has indeed been made on a modest scale to afford guidance to the ambitious graduate in law who desires to proceed to the higher degree of master of law. The regulations for this examination contemplate the advanced study of topics of fundamental importance, such as jurisprudence, principles of legislation, Roman law, private international law, Hindu law, Muhammadan law, history of English law and the like, and it is of the highest importance that there should be at least one centre within the jurisdiction of the University where subjects of this character may be adequately studied, reviewed and investigated from the critical, historical and comparative standpoint. It may be that even if arrangements are made on an elaborate scale for these higher studies, they are not likely to attract at first a considerable body of students; the truth is that we have to create in part the appetite for what we aim to supply by the organisation of post-graduate courses in law. For this purpose, it is essential that during the three years' course of study which leads up to the degree of bachelor of law, the student should be so trained that his powers of vivid thinking, acute analysis, close reasoning and clear expression may be well developed. He should, at the same time, be made to appreciate that law is the application of the ideal of justice to the actual affairs of life; for it is only by such appreciation that he can realise that his studies are not limited to an arbitrary system of rules

but are organically connected with scientific jurisprudence. Such a student alone can feel the importance and the ultimate necessity of post-graduate courses of the highest grade. In learning private and technical law, he should feel that it is not complete and not workable to the highest advantage if taken without its broader relations with universal law. As the teacher leads his class along the ordinary galleries of every day law, he should not forget to call the attention of his pupils to the doors on this hand and that, which open into the inner halls of learning, and if possible, give them a glimpse within, as they pass, so that they may be the more inclined to return another year and explore the treasures of which they have as yet no adequate idea. This aspect of the matter leads us on to another defect which we noticed in connexion with this department of the University.

6. The third point which we desire to emphasise is that here, at any rate all the courses need not be so designed as necessarily to meet the specific requirements of a particular examination. The ever expanding field of legal science contains so many topics that it is impossible to include them all as compulsory subjects of instruction in any system of legal education. Indeed, in almost every branch of education, developments have proceeded so rapidly in recent years by reason of the extension of human learning that the same problem faces us for consideration. It is consequently desirable that in addition to the usual courses prescribed for examinations, there should be instruction provided in other subjects such as public law, international law, the history and theory of law, comparative jurisprudence and the science of government, which may attract advanced students. There might in fact be provision made for a group of studies, some of which might perhaps be regarded almost as extra-legal, such as the history of constitutional law, a course in the continental legal philosophies, the history of administrative law, public and private international law, the theory and practice of the principles of legislation, and the science of criminology—many of them with special reference to Indian applications. Courses of this character would appeal powerfully even to men of culture who might have no intention of practising the profession of law. They would at the same time be invaluable to others who might desire to be teachers of law or practitioners in special departments. It is plain, however, that if legal studies are to be organised on such a comprehensive scale, substantial additions to

the staff would be required. We make no reflection whatsoever on the adequacy and competence of the present staff, which includes many practitioners of ripe experience and scholarship; but while we realise fully that certain departments of law are best taught by scholarly lawyers in intimate touch with the daily life of the courts, there are some topics which may with advantage be entrusted to the professor who is able to devote a considerable portion of his time to the investigation of his special subject. There is, at the present moment, on the staff of the college, only one such whole-time professor, namely, the principal; the professor in charge of the library may also possibly be included in the same category. But this is clearly insufficient from the point of view we have outlined. We accordingly suggest that the question of the mode of appointment to the Tagore professorship be taken up in this connexion. Appointments to this chair are, under the present rules, made from year to year; but it is worthy of consideration whether, when the University is reorganised and a department of legal studies established on a comprehensive scale, that chair should not be held on more or less the same terms as the other chairs in the University.

III.—A special problem.

7. We have finally to deal with the question of the propriety of the simultaneous study of M.A. or M.Sc. and B.L. courses by graduates. There are, as we have already indicated, advocates of a rigid rule that no graduate in arts or science should be allowed to undertake studies in two faculties simultaneously; but after careful consideration of the question we have arrived at the conclusion that an inelastic rule of this description should not be laid down. A prohibition of this character does not appear to have been prescribed in any university up till quite recent times; the only precedent is to be found in a provision contained in the regulations imposed by the Government of India upon the newly constituted University of Benares. On the other hand, we have the undoubted fact that ever since the establishment of the University of Calcutta, many graduates of distinction have simultaneously prosecuted the study of law and post-graduate courses in the Faculties of Arts or Science without any apparent detriment. There are also instances in which Indian students, who have proceeded to British universities, have been able to carry on their legal studies simultaneously with their studies in arts or science, and cases are known where

Indian students in London and even at Cambridge and Oxford have not only simultaneously pursued their studies in two faculties in the University of their choice, but have also managed at the same time to keep terms in the Inns of Court and to qualify themselves as barristers-at-law. In our opinion, a hard and fast rule which imposes a disability of this description cannot be justified, except upon conclusive proof that simultaneous study in two faculties is so harmful to all students that they must be saved from their own indiscretion. It must not be overlooked in this connexion that the minimum age for graduation in arts or science, under conditions existing here, is between 20 and 21 years, whereas the average age of the successful graduate is nearly two years higher. It is not too much to assume that young men at that age may generally be trusted to determine what is best for themselves, with the aid of such advice as they may be able to obtain from their guardians or college authorities. On the other hand, it cannot always be asserted that the studies in the two faculties are of so diverse a character that their simultaneous pursuit must distract the attention of the student. There may, indeed, be combinations which may prove extremely helpful. For instance, a student may with profit undertake simultaneously the study of political philosphy in the Faculty of Arts and of Jurisprudence in the Faculty of Law; he may in the same way usefully combine the study of English constitutional history or Greek history or Roman history with Roman law; or, again, he may combine the study of Hindu law with that group of Sanskritic studies which includes Smriti (law) and Mimansa (rules of interpretation). In fact, the more we examine the question, the more obvious does it become that the suitability or otherwise of the combined courses must depend upon a number of complex factors, such as the physical health, the intellectual capacity, the special aptitude, and the antecedent training of the individual, besides the nature of the subjects selected by him. We must not further entirely overlook the social needs and circumstances of the country, which in a manner force many a student who has reached the stage of a first university degree in his career to undertake further studies in arts or science as well as studies in law; for instance, many of them find themselves still in a state of uncertainty as to their future, and are not able to determine whether they will ultimately adopt the vocation of teacher or take to the profession of law. Taking into account

all these considerations, we incline to the view that on the whole the wisest policy to adopt is — not to rule on *a priori* grounds that it must be harmful to students (in general or in individual cases) to pursue their studies simultaneously in two faculties—but to leave them free, under the guidance of their guardians and teachers, to make their choice, and then to exact from them the full measure of work in whatever course or courses they may have selected. If a student who has deliberately taken up courses in the Faculties of Arts and Law is able to give a satisfactory account of himself to his teachers in both the Faculties, the propriety of his decision becomes unquestionable. On the other hand, if after a reasonable time, he is found unequal to his self-imposed task in either of the Faculties or in both of them the obvious course to follow is to remove his name from either or both places. This, indeed, is a corollary to the wider rule that the student who is unequal to his work in any Faculty should abandon it—it is wholly immaterial whether he fails to attain the standard expected because he is distracted by other studies or spends his time in other avocations. Possibly, the bearings of this aspect of the matter have not always been fully realised. We regard it as of vital importance that the authorities should impress upon the teachers in each faculty the absolute necessity of rigorously exacting from every student the full measure of his work. The teacher is able to enforce this demand even under the existing regulations.[1] Under the regulations in both faculties, the student is bound to attend regularly the prescribed courses. Such regular attendance does not imply mere physical presence at lectures. If a student shirks his work in either faculty on the plea that he is taxed beyond his capacity by reason of the exacting nature of his work in another faculty, his name may and should be removed from the rolls. If this view is inexorably enforced, regularity of work will be promoted and the cause of discipline will be strengthened. We may add that it is felt by some of us that students should be allowed to take up their studies in two faculties, only with

[1] The Executive Committee of the Council of Post-Graduate Teaching in Arts adopted the following resolution on the 25th February 1918:—

"That it be notified that students who absent themselves from the tutorial classes, or neglect their tutorial work, will not be promoted from the fifth year class to the sixth year class or sent up to the university examination, as the case may be."

the previous consent of their deans. Much could undoubtedly be urged in favour of such a course, if the number of students to be dealt with were not so large. The judgment upon the question must in each case, however, depend, as we have already indicated, upon the investigation of so many factors peculiar to the individual, that the other members of the Commission feel that a rule of this description would either be impracticable if strictly applied or be reduced to a mere formality. We may point out that in so far as a particular class of students is concerned there will be ample safeguard against unwise combinations of courses of study; we refer to the students who obtain honours in the B.A. or B.Sc. examinations and then proceed, on the plan we have outlined elsewhere, to the degree of M.A. or M.Sc. on the production of a thesis. In the case of such a student, the privilege will be granted, only on the certificate of his professor that he is well fitted to undertake work of this description, followed by the approval of the Dean of the Faculty; and the professor and the dean may be trusted to make sure that the student is not so otherwise absorbed as to make it unsafe for him to undertake such exacting work. Such a hope, indeed, is encouraged by the action which has recently been taken by the University on the unanimous decision of the Post-Graduate Councils of Teaching in Arts and Science. The Councils have ruled that no student will be allowed a 'freeship' in the post-graduate classes if he simultaneously undertakes the study of law. This decision has been based on a two-fold ground. In the first place, the student who is able to provide the fees required by the University Law College (where no freeships are allowed)[1] can hardly be deemed so indigent as to deserve the award of a freeship in the post-graduate classes. In the second place, a really indigent student has, in addition to his studies, to work for his living, and it is manifestly undesirable that a student who is unhappily so hampered should simultaneously undertake exacting studies in two faculties. It is consequently plain that the teachers themselves are fully alive to the needs of the situation, and we may leave it to them to advise their pupils and discourage them from embarking upon what, in individual instances, may prove to be unsuitable courses of study. Such helpful advice will be easily available when the University is reconstituted, as the

[1] Scholarships are available, see Chapter XXII.

scheme we have outlined in another chapter contemplates that post-graduate students will ultimately be attached to colleges and will have the benefit of the guidance of their tutors. Upon a full consideration, then, of all the circumstances, our conclusion is that an inelastic preventive rule need not be prescribed by the University.

CHAPTER XLVI.

Engineering, Mining and Architectural Education.

I.—Introductory.

1. In Chapter XXIV, we have given a sketch of the history of engineering education in Bengal and of the existing conditions of both the higher and the lower grades of that education. Various aspects of the subject have been recently dealt with by two bodies, the Public Works Department Reorganisation Committee and the Industrial Commission. In the present chapter our object will be to deal with the higher grades of engineering teaching, and we shall only touch on the lower grades—which have been discussed in detail by the two bodies above named—in so far as they are linked at present with the higher grades. We shall also deal with architectural teaching.

II.—The Sibpur site.

2. We have seen[1] that the question of the removal of Sibpur Engineering College from its present site has been under discussion since 1903; and that the proposal to remove the college course was urged mainly on the ground of its unhealthiness. There can be no doubt that the health of the college has improved greatly in recent times. From the Quinquennial Report on the college of 1912-13 to 1916-17[2] it appears that the sick rate fell during the seven years preceding the issue of the Report by about fifty per cent. The letter of the Sanitary Commissioner for Bengal of April 2nd, 1917, to the Director of Public Instruction which is printed in the volume of appendices to this report will, we think, be held finally to dispose of the argument for removal on the ground of unhealthiness. Dr. Bentley writes that the college as it stands at present is in a far healthier position than could be found for it in any place to the north, south, or east of Calcutta and that he is

[1] Chapter XXIV, para. 18.

[2] Published by the Bengal Secretariat Depôt, 1917, see page 2.

exceedingly doubtful, if it would be possible to name a better site unless it were the very centre of Calcutta, in Dalhousie Square or Chowringhee.

3. At the same time Dr. Bentley thinks the site can probably be improved at a comparatively small cost by certain measures, *viz.*—

(1) increasing and improving the water supply;
(2) providing a water carriage system of sewage disposal;
(3) improving the surface drainage of the locality and diverting that from the trenching ground;
(4) abolishing the trenching ground at the earliest possible opportunity.

We trust that it may be possible to effect these improvements at an early date.

4. The former objections to the Sibpur site were not only that it was specifically unhealthy; other objections were raised. The climate was said to be too enervating for satisfactory work either by the staff or by students; but this statement has not been confirmed by any evidence placed before us. The proximity to Calcutta was regarded as detrimental to the morals and discipline of the students; but this argument is a general argument which applies to other students no less than to engineering students; it applies, indeed, less to the students in a residential college like Sibpur where the students are under the full control of the college authorities than to most of the colleges in Calcutta at the present day. The other grounds put forward in favour of removal were the unsuitability of the then existing buildings and the necessity for making further provision for mining students. These were reasons rather for making a prompt decision at the time in regard to removal than for removal in itself. The question of mining we shall deal with in paragraphs 26-32 below.

5. It was the opinion of the Calcutta Technical Institute Committee, an opinion we believe generally held in India, that higher civil engineering should, if possible, be taught in a residential college[1]; and the committee and their successors, Messrs. Nathan, Küchler and Everett, urged that if the Sibpur College was removed, provision should be made for teaching mechanical and electrical

[1] Chapter XXIV, para. 22.

engineering in Calcutta, so that the scheme for removal was only a scheme for partial removal.[1] While we think that some of the reasons alleged for the removal of the Enginering College from Sibpur have disappeared with lapse of time, and that others cannot be justified, we are bound to admit that the distance of Sibpur from the centre of Calcutta, 5½ miles, is a real disadvantage; and, as was pointed out in 1889,[2] it would have been more convenient to have the engineering school in proximity to the dockyards and in touch with the railways. But we are convinced that no such spacious or adequate site for a residential college could be purchased for any reasonable figure in the neighbourhood of Calcutta; and even for a mainly non-residential college, the cost of a site would be very great, if it had to provide for large engineering shops on the scale of the existing shops at Sibpur. We are clearly of opinion that, taking into consideration all the points we have mentioned, the Sibpur College should be maintained and developed on its existing site. As we propose that it should provide for the higher teaching of various branches of engineering the present title will no longer be appropriate, and we think the college should receive some such title as the Bengal Engineering College, Sibpur. We have now to consider the provision that should be made for the various branches of the subject.

III.—The development of teaching in the Sibpur Engineering College.

6. *Civil Engineering.*—We think it may be accepted without question that the Sibpur College is capable under the existing arrangements of giving the college training necessary for turning out competent civil engineers of university rank, and that no fundamental changes are required in this department, although there is evidence that the practical training which follows the college teaching is insufficient.

7. The Public Works Department Reorganisation Committee made recommendations affecting (1) the maximum age of entry, (2) the standard of admission, and (3) the length of the college

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[1] Chapter XXIV, paras. 22, 25 and 26.

[2] *Ibid.*, para. 9.

courses, three matters which are closely inter-related and must be considered together.

(*i*) The Committee propose that the age of entrance should not exceed 19 on the last birthday (as against the then existing limit of 21) for students who had passed the intermediate and of 23 for students who had passed the bachelor's examination (limits which have since been modified).[1]

(*ii*) The Committee propose that the standard should be the intermediate standard of an Indian university with English, mathematics, physics and chemistry as compulsory subjects, or such European school standard as may be considered equivalent, but that this examination should be supplemented by a special entrance examination in the four subjects named; and the English at this latter examination is intended to be 'modern English including a short essay and an oral test.' The second examination proposed would be of a competitive character if there were more applicants than could be admitted. It is to be remembered that the present minimum standard is the intermediate examination, taken with the subjects above-named, except that an alternative is now allowed between physics and chemistry, while both these subjects would be compulsory under the new scheme.

(*iii*) The Committee propose that the whole period of training should remain five years, as at present required for the diploma; but that instead of being divided into four years' college training and one year of practical, it should consist of three years' college training followed by two 'spent on works.'

8. We do not wish to trench unduly on the province of a specialist committee such as the one we have quoted. But we think that in the recommendations to which we refer, they have hardly given due consideration to the questions of general secondary education and of the difficulties of medium involved. While we are not averse from some lowering of the maximum age for entrance, we think that it will be some time before the age of 19 will be

[1] Chapter XXIV, para. 40 (*c*).

sufficiently high as a maximum age. It will be seen from figures quoted in Chapter XI, paragraph 97, that the average age of matriculation at the Calcutta University is about 18½ and that under the rules proposed half the matriculates would at present be excluded from Sibpur, since they could not reach the intermediate examination till over 20. We hope that improvements in secondary education and of the intermediate colleges will lower the age at which the intermediate examination is taken ; but this will take time.

9. Rai Bahadur Lala Ganga Ram in a dissentient note proposed as one alternative that a bachelor's degree in arts or science should be the entrance examination, with 20 as the maximum age for entry. We fear that this scheme would debar an even greater number of candidates than the scheme of the majority. As a second alternative, the Rai Bahadur proposed that if 19 is adopted as the maximum age for admission, the matriculation or school leaving standard should be fixed as the minimum educational qualification ; but this standard we regard as too low for entrance to a university course.

10. Rai Bahadur Ganga Ram further raises specifically the question of English and writes[1] :—

" I would also emphasise the argument adduced in paragraph 77 (*a*) of the report, that the Indian student has the disadvantage of having to prosecute his studies in a foreign language, and if he is to hold his own both in college and in after life with his English confrères, he must have a thorough grounding in the language at the start, a grounding which, in my opinion, is not connoted by the intermediate standard."

Mr. F. A. A. Cowley, Chief engineer of the Public Works Department, Bengal, has told us in his evidence that graduates in engineering, even under the present system, are unable to express themselves properly in English.[2] A good knowledge of English is of course indispensable to the engineer.

We have elsewhere explained the necessity of measures for improving the standard of English teaching and hope that such measures will prove effective at an early date. But in the meantime, the inefficiency in English must be taken into account not only in connexion with the entrance standard, but also in connexion with the length of the course. A B. A. or B.Sc. ought no doubt

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[1] Report of Public Works Department Reorganisation Committee, Volume I, page 84.

[2] General Memoranda, page 41.

to be able to follow the bachelor of engineering course without any kind of difficulty; but if the present intermediate standard for the entrance qualification is retained, as we think that it should be, we have doubts whether the three years' college course proposed by the Public Works Department Reorganisation Committee would be sufficient for the average student who enters at the intermediate stage and who is, and for some time will be, handicapped, as compared with the English student, by his want of knowledge of the medium.

11. The proposal of the majority would definitely bar out bachelors of science from taking an engineering course. We think it may be wise to give the preference to men who begin their engineering course relatively young; but if there is room in the college we see no reason why an older but promising candidate should be barred out by any hard and fast rule of the kind proposed. It would be sufficient, we think, to provide that, other things being equal, preference should be given to candidates under a prescribed age.

12. We have no difficulty in accepting the view that two years' practical training should be required, before any degree or diploma is conferred in civil engineering if that is regarded by the experts in the subject as necessary. But for the reasons stated we venture to doubt whether the recommendation of the Public Works Department Reorganisation Committee in regard to the lowering of the maximum age for admission to 19 and the shortening of the college course from four to three years ought to be carried into effect at any rate for some years to come.

13. The Committee make one suggestion in regard to curriculum they write[1]—

"It is desirable that every civil engineer should have an elementary training in architecture, and with this object in view we recommend that, where it is not already the case, the elements of the subject should be added to the curricula of the engineering colleges."

Engineers are so often asked in India to carry out architectural work that there are special grounds for this recommendation, which we support and which falls in with the proposals we make in regard to teaching architecture as a separate subject at Sibpur.[2]

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[1] Report, para. 85.

[2] See paras. 39 and 40 below.

14. In regard to the training in civil engineering of a grade lower than the university grade, the Public Works Department Reorganisation Committee reported as follows :—

"In our proposals regarding the reorganisation of the public works department we have advocated the abolition of the present upper subordinate class, and the retention of only two classes, engineers and subordinates. We recommend that the same principle should be applied to the engineering colleges also, since the upper subordinate appears to us to be an undesirable compromise between the engineer officer and the subordinate proper, and we believe that not only Government but public bodies and private firms also, would be better served by an engineer trained and recognised as such. There should, we consider, be only two departments of civil engineering in each college, for the training of officers and subordinates respectively, the engineers for both the superior and provincial Government services, and also the district engineers contemplated in our reorganisation scheme, being drawn in general from the former class. We recognise that there are objections of principle to the present system under which engineers and subordinates are trained together in the same institution and, while recognising that no change may be possible in the immediate future, we consider that when the demand for engineers justifies the step, the ultimate policy of Government should be to eliminate all forms of subordinate education from the colleges and to provide for them in technical schools."

We are in general accord with the recommendations quoted so far as they affect Sibpur and shall refer to them again later. In the meanwhile we may point out that steps are being taken at Sibpur in the direction indicated. The sub-overseer's class has been abolished, and the length of the overseer course has been reduced from five to four years of which three are to be spent at the college, as recommended by the Committee.

15. We understand that the college is making arrangements for courses to be given in civil engineering by visiting teachers. We welcome this innovation, for civil engineering is now, like other branches highly specialised, and it will be of advantage to the students to attend lectures by specialists on various special subjects such as irrigation, various branches of railway engineering, reinforced concrete, etc. Later the school may itself perhaps be able to provide more specialised teaching in some of these subjects.

16. *Mechanical engineering.*—This side of the work presents much greater difficulty than civil engineering.

"Indian civil engineers," say the Indian Industrial Commission,[1] "have done well in the Public Works Department and have established their claims

[1] Report, para 154.

to promotion to the higher ranks of the service; but in mechanical engineering which, outside the railway workshops, is mainly carried on by private enterprise, we find that in the absence of a proper system of training, they have seldom attained to positions of importance and responsibility."

17. The problem of training in mechanical engineering in Bengal differs essentially from the corresponding problem in England because of the averseness of so many high caste Bengalis to use their hands and because unlike the English youth who wishes to become a mechanical engineer, and who in accordance with universal tradition does the work of an ordinary workman and accepts the pay of an ordinary apprentice during his training, the average Bengali youth regards such work and such pay as beneath his dignity and is therefore unable to acquire the practical experience necessary to make a successful mechanical engineer. One committee after another has called attention to this difficulty.[1]

18. As we have seen,[2] a sub-committee of the Sibpur College recently reported that there was no demand which would justify the local training of mechanical engineers of the university type. But this is not the present view of the principal or the staff. In their memorandum[3] they point to the new situation created by the war, the expansion of industries due to military demands, the difficulty of obtaining engineers from Europe and the probability that after the war this difficulty will not in any way be diminished.

"The problem," they say, "is a very urgent commercial problem. The industries need the men and need them badly. They are perfectly willing and anxious to engage competent men quite irrespective of their nationality. A competent Indian who can live on a lower scale of pay than a European will have a great advantage. We must, therefore, forge ahead and that without delay."

But the Sibpur staff as a whole do not submit any scheme for providing a course in mechanical engineering of a more advanced kind than that above given.

19. The Indian Industrial Commission, whose enquiries have been carried out simultaneously with our own, and with whom we

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[1] The general question of the aversion of high caste Bengalis to manual labour is discussed in Chapter XXV, on Agricultural Education, para. 28.

[2] Chapter XXIV, para. 38.

[3] General Memoranda, page 27.

had the advantage of an informal conference, point out in their report[1] that—

"especially since the outbreak of the war, various causes have attracted public attention in an increasing degree to the predominant importance which mechanical engineering is now beginning to assume in this country and that the attention of the educated public and in particular of the large 'industrial employers' has been drawn to the inconveniences and dangers that arise from the entire dependence of India on imported personnel for the supervision of engineering industries."

20. The Indian Industrial Commission base their plan on the recommendations of engineering education of the Committee of the Institution of Civil Engineers of 1905, which, as they say, represented the collective experience of engineers belonging to practically every branch of the profession; and which they think may still be taken as representing the general views of the profession. The recommendations of that Committee were as follows:—

(1) That the average boy should leave school when he is about 17 years of age; that much depends upon the development of individual boys; but the minimum age should be 16 and the maximum 18 years.

(2) That the practical training should be divided into two parts, and that the preliminary stage of practical training should consist in all cases of at least a year spent in mechanical engineering workshops.

(3) That during workshop training, boys should keep regular working hours and should be treated as ordinary apprentices, be subject to discipline and be paid wages.

(4) That nothing should be done in the form of evening study which would impose unnecessary strain upon the boys.

(5) That, as a rule, it is preferable to proceed to a technical college on the completion of the introductory workshop course; but that, in the case of boys intended to become mechanical engineers, it may be advantageous to complete the practical training before entering the college; but in such cases it becomes important that simultaneous education during practical training should be secured. Otherwise the boys would lose seriously during four or five years' suspension of systematic study, and would be at a disadvantage on entering the college.

(6) That for the average student, the period of college study should be at least three years.

(7) That at least three to four years should be spent in practical training, inclusive of the introductory workshop course previously mentioned."

With reference to the foregoing scheme, the Indian Industrial Commission express themselves as follows[2]:—

"The methods pursued in this country, however, differ widely from the system suggested above. The age of boys when they join an engineering college

[1] Report, para. 155.

[2] Report, paras. 157 to 159.

in India is from two to three years higher than that recommended. Most, if not all, of the colleges prescribe a period of training in workshops after the completion of the theoretical courses, just as we have seen in the case of institutions giving a lower type of training; but even this period is much too short to be of practical value to mechanical engineers, no attempt is made to subject the students to regular workshop discipline, and they are not compelled to attend the full working hours. They go from shop to shop making notes and sketches, and watch others at work, but, as a rule, do nothing themselves. This course, such as it is, broadens the outlook of students who are intending to become civil engineers; but it is worse than useless as an initiation into the mechanical side of the engineering profession.

It has been objected that educated Indians will be unwilling to submit to the early hours and hard conditions of workshop training. This may, no doubt, have been the case in the past, but there are numerous signs of a marked change in sentiment, and we feel confident that, if facilities are provided, increasing use will be made of them. There are difficulties in the way, we admit; but they are not so great as is often supposed, and can be overcome.

There is, thus, as we have seen, a very decided consensus of opinion among practical men that the ideal method of training mechanical engineers is to combine workshop practice and technical instruction as closely as possible. To attain this end in India the workshop has been imported into the college, but the results have not been altogether satisfactory. The atmosphere of the workshop cannot be obtained in the school, and the importance of this is so great that we are convinced that mechanical engineers must be trained in the workshops, receiving supplementary class instruction in technical school alongside, which should, of course, be of a more advanced nature than that which would be provided for foremen. That is to say, the mechanical engineer, by which term we mean the man who in after-life will be responsible for the design and construction of machinery and structural iron-work of every kind, should be trained in a way analogous to that prescribed for the members of the labouring classes who will become artisans, and the boys of a higher social grade and with a better general education who aspire to become foremen; but he should start in the workshop somewhat older and after a more prolonged general education. In the factory, he should be regarded as a workman and treated as such, and paid wages which should represent the market value of the work he does; but he should not spend the whole of his time in the workshops. Roughly, the time spent in the technical classes should be equal to one-third of the total working hours of the shops, but whether this be so many hours a day or so many days a week matters little and may be arranged to suit local circumstances. The main idea underlying our conception of the proper method of training mechanical engineers is thus a fundamental modification of the current practice in India; the chief training ground should be the workshop, though the class-room is also indispensable.

After the period of apprenticeship is completed, and this should not be less than four years and may usually with advantage be five, those apprentices who desire to specialise should be provided for in one or more of the existing engineering colleges, where advanced courses of instruction will be given in such subjects as applied mechanics, electrical engineering, the physical sciences, hydraulics, the strength and properties of materials, and heat engines.

It should be recognised that these students are adults seeking to gain knowledge for a very special purpose, and they should not be treated as undergraduates and forced to go through a rigidly prescribed course of instruction, such as is now provided in the engineering colleges of university rank. Our general idea is that colleges of this status should be made accessible to advanced students who wish to take special, instead of complete, University degree courses."

21. The Indian Industrial Commission appear to advocate, though they are not quite explicit on the point, complete university courses in mechanical engineering for those who wish to take a college course followed by practical training, as well as special courses for students who have taken a combined course of workshop training and technical education before proceeding to the college.

22. At the present moment, as we have seen, there is only a three years' course given in mechanical engineering at Sibpur, designed for students who start with little or no knowledge of the subject. It is clear that this should in many cases be supplemented by more advanced courses extending over another year in mechanical (and in electrical) engineering if the courses are to be brought up to the degree standard as proposed by the Indian Industrial Commission, an extension which will require additions both to the equipment and to the staff.

It is to be pointed out that for the students trained on the plan proposed by the Indian Industrial Commission such courses will hardly be required for at least four years. But we think they should be established as soon as practicable and be made available for the present Sibpur students.

23. The sub-committee of the Sibpur College referred to in Chapter XXIV, paragraph 38, suggested that the mechanical engineering classes should be fed by a double stream, about half entering the college after a system of workshop training like that now proposed by the Indian Industrial Commission, the other half entering the college direct and taking their practical training at a later stage. The scheme we suggest is identical with that of the sub-committee except that we propose with the Indian Industrial Commission that not only training for subordinates but the highest training in mechanical engineering should be given at Sibpur, to meet the growing needs of Indian industries. We see no reason why a university degree should not be awarded in mechanical engineering to students at Sibpur. But every student should pass either before, during, or after his college course, through a period

of practical training extending over at least three years, and not different or less stringent in character for those who take the practical training after the college course than it is for those who take it before the college course. It should be made plain to students entering Sibpur on the mechanical side that unless they are willing to take such training at some period in their career it will be a waste of time for them to enter on the course at all. If experience shows that direct entry to the college without previous training in the workshops leads to unsatisfactory results this alternative can be abandoned. But we think it should be tried. We shall discuss later the questions of requiring practical training as a necessary prerequisite to the conferment of a degree.

24. As we have pointed out, the addition of a higher course in mechanical engineering at Sibpur will involve additions both to the staff and to the equipment. We are not prepared to make detailed suggestions in this matter, which should be considered by the new governing body of which we shall propose the establishment.

25. *Electrical engineering.*—In regard to electrical engineering the Indian Industrial Commission report as follows[1]:—

"We have not specifically referred to the training of electrical engineers, because electrical manufactures have not yet been started in India, and there is only scope for the employment of men to do simple repair work, to take charge of the running of electrical machinery, and to manage and control hydro-electric and steam-operated stations. The men required for these three classes of work will be provided by the foregoing proposals for the training of the various grades required in mechanical engineering. They will have to acquire, in addition, special experience in electrical matters, but, till this branch of engineering is developed on the constructional side and the manufacture of electrical machinery taken in hand, the managers of electrical undertakings must train their own men, making such use as they can of the special facilities offered for instruction at the engineering colleges and the Indian Institute of Science."

Mr. B. C. Gupta[2], of the Sibpur College, told us that the present demand for electrical engineering students from the college was for students of the foreman type, but he advocated the extension of the present course to four years and made a university course.

There are at present a number of electric light and power stations in India; the question whether advanced training in electrical engineering should be given before the demand for responsible

[1] Report, para. 159.

[2] General Memoranda, page 104.

electrical engineers has further increased in India is one for serious consideration. We think it should be referred to the future Governing Body of the College.

26. *Mining engineering. The projected colliery school at Dhanbaid.*—In Chapter XXVI, paragraphs 47-52, an account has been given of the mining education of various grades in Bengal and it has been shown that the training given, except at Sibpur, is inadequate for the training of men for the first class colliery manager's certificate, though it may suffice for the managers of the smaller collieries. Even the proposed mining school at Dhanbaid as planned by the Committee on Mining Education in Bengal and in Bihar and Orissa, under the presidency of Sir Duncan Macpherson, 1913-14,[1] would have provided mining education of a higher secondary rather than of university standard. The entrance qualification to the school was to be of the standard of the matriculation or the junior Cambridge local certificate. The principal was also to act as professor of mining engineering. Geology was to be taught as part of the work of the professor of mining and surveying. A third professor was to have the title of 'professor of science and mathematics' and was to teach mathematics, chemistry, mineralogy, assaying, coal analysis and physics. The fourth professor on the staff was to be responsible for the training in electrical and mechanical engineering. It is clear that a school, each member of whose staff is to teach so wide a range of subjects, could not undertake the higher training required in the various specialised branches of mining engineering. The school could not, with the staff proposed, give advanced training in mining geology, in higher electrical technology, or in the study of fuels. It might become a very efficient school for the training required for the colliery manager's certificate; but unless supplemented by work elsewhere, its students would not be qualified for the highest posts in colliery engineering. It would inevitably specialise in coal mining and pay less attention to the mining of other minerals. The estimates for the Dhanbaid School were based on the intention that it should accommodate about 50 students and so turn out from 10 to 15 qualified colliery managers a year. That number should find employment on the Indian coalfields and leave no surplus for other branches of the mining industry.

[1] Chapter XXIV, para. 53.

27. *Recommendations of the Indian Industrial Commission.*—The Indian Industrial Commission have considered[1] three possibilities in regard to the establishment of a school of mining, (*a*) the maintenance of the present department at Sibpur, (*b*) the establishment of a self-contained mining school on the coal fields, (*c*) the establishment of a mining school at the proposed imperial institution for the teaching of metallurgy at Sakchi. The Commission point out as advantages of the Sibpur scheme that it would be cheaper than the Dhanbaid scheme, that it would bring the mining students into contact with those studying other branches of engineering, and that Sibpur would possess better and more established traditions than any new institutions. But they point out that while visits to coal mines take only a few hours from Dhanbaid, they take 36 hours from Sibpur, that the staff of an institution on the coalfields may be in close touch not only with the latest development of the industry, but with employers and managers, which is of advantage to students both while under training and while seeking employment; and that according to the sub-committee appointed in 1916 to consider the future of the Sibpur mining class it would be hard for teachers there to secure practical training for their students in collieries, while a staff at a school in the coal field could do this with comparative ease. The Commission regard it as a matter of importance to keep the school in close touch with the coal mining; and they finally point out that the staff of a school on the coalfields could maintain intimate relations with those of its students who were taking the practical portion of their course at one or other of the mines. On these grounds the Commission preferred the Dhanbaid to the Sibpur scheme. They then compared the relative advantages of establishing a mining school as part of the proposed institute of technology at Sakchi, and pointed out that a considerable saving in cost could be effected and a more efficient staff and equipment provided by combining in the same institution the higher forms of training for mining and metallurgy. But on the ground that it would be in less intimate touch with the coal-mining industry than Dhanbaid. The Commission preferred Dhanbaid to Sakchi; and they recommended that pending the establishment of the Dhanbaid School the classes at Sibpur should be maintained and the teaching steadily improved.

[1] Report of the Indian Industrial Commission, 1916-18, paras. 167-171.

28. *The need for higher mining education at Calcutta.*—A school of mining engineering which would be more advanced in standard and less restricted in range than that of the proposed school at Dhanbaid is necessary in India, and Calcutta has many special advantages as the situation for such a school. This statement is contrary to the widespread belief in the principle that a mining school should be upon a mining field. In accordance with that principle, the leading early mining school in Britain was established at Camborne in Cornwall; the mining school in the United States which long enjoyed the highest reputation was that at Houghton in Michigan; the historic mining schools of Germany were those of Freiberg on the mining fields of Saxony and of Clausthal in the mining field of the Harz; Victoria established what was intended to be its chief mining school on the gold field of Ballarat. In all these cases as well as in others the mining school on the mining field has been surpassed by those of the educational and industrial capitals. The chief English mining school is in London; that of the United States is in New York, of Germany in Berlin, and of Victoria at Melbourne. The apparent advantages of giving mining education on a mining field are outweighed by less obvious drawbacks. The school on a mining field is isolated, and its staff are apt to lose touch with scientific progress. The school naturally tends mainly to teach the mining methods which can be illustrated at the adjacent mines; and thus the students get a bias for one system, instead of an all-round knowledge of general mining practice. Most mining fields are liable to decline permanently or temporarily as the mines are exhausted or become less profitable, and the mining schools upon them simultaneously decline, and may be continued as general secondary schools. Moreover, the advantage of proximity to the mines is less than it would appear to be at first sight. The experience in a mine which is of most practical value to the student is gained by working as a miner for weeks or months together; and during that time he must live close to the mine at which he is employed. The projected site of the Dhanbaid school is two miles away from the edge of the coalfield and several miles from any large coal mine; and, as the collieries nearest Dhanbaid will be comparatively soon worked out, coal mining will steadily recede from the site suggested for the school. The inconvenience of a railway journey from Calcutta is insignificant to a student who is going to work at a mine for two months, compared with the

advantages he would enjoy at Sibpur of contact with students of other branches of engineering and with the opportunity of specialising in some branch of higher technical training. Sibpur, moreover, has well-established traditions and, as the Indian Industrial Commission pointed out, already trains most of the students who obtain the first class colliery manager's certificate; both in 1916 and 1917 two-thirds of the successful candidates were from Sibpur. Further, though the student at Dhanbaid would unquestionably be more likely to get access to the mines at Jharia, the teachers at Dhanbaid would have a close personal acquaintance with the engineers of the mines there, yet the staff at Sibpur would have better opportunities of knowing the officials connected with mines on other coalfields and with the metalliferous mines which are administered from Calcutta. As a centre for employment in the scattered mining fields of India and Burma, Calcutta has great advantages over a mufassal centre such as Dhanbaid; and Calcutta will probably remain the chief administrative centre for the mines of Eastern India, Burma and Assam.

29. *Co-operation of Sibpur with the Dhanbaid School.*—Nevertheless we agree with the policy of the Macpherson Committee and of Messrs. Adams, Roberton and Glen George in favour of establishing a mining school on one of the Bengal or Bihar coalfields. The advantages of Dhanbaid are however at present counterbalanced by one serious though remediable objection. A school at Dhanbaid should co-operate with the mining department at Sibpur; but section 11 of the Patna University Act prohibits any university in British India except Patna University from admitting "any educational institution in the province of Bihar and Orissa to any privileges whatever." So long as that section remains unamended the most effective forms of organised co-operation between the mining school of Calcutta University at Sibpur and the mining school at Dhanbaid are impossible. We hope therefore that the section may be modified. Students from Dhanbaid should be able to attend at Sibpur the more advanced courses in, say, electrical technology, the chemistry of fuels, mining geology and higher surveying; while students from Sibpur might be attached to the Dhanbaid School, while undertaking practical training on the Jharia coalfield, or might attend special courses of lectures at the school on branches of colliery work. But if Sibpur cannot admit students from Dhanbaid to 'any privileges' there would

be no basis for co-operation; and we feel bound to recommend that if the section is not amended the Bengal Government should not contribute to the support of a school of mines unless it is situated on one of the coalfields in Bengal. With that qualification we support the proposal for the establishment on one of the coalfields of a school of mines which should specialise in coal mining and act in co-operation with the mining department at Sibpur, which we desire to see maintained and developed on the lines suggested in paragraph 32 below.

30. *The proposed Central Metallurgical Institute at Sakchi.*—If the Sibpur Mining Department teaches the mining of metalliferous ores some training will be necessary there in assaying and metallurgy. The Indian Industrial Commission recommends the establishment at Sakchi of a central specialised school of metallurgy to serve all India. This proposal is not put forward for immediate adoption. Hence it appears undesirable for metallurgical education to be entirely suspended in Bengal until this central institute be established. Some instruction in general metallurgy at Sibpur is indispensable; but considering the great advantages which Sakchi will possess for the teaching of advanced metallurgy we consider that Calcutta should not attempt to compete with it in that subject. A general metallurgical course, more elementary than that at Sakchi, should, however, be maintained at Sibpur for the benefit of students of mining and engineering, while Sibpur students who wish to specialise in metallurgy should go to Sakchi to complete their studies.

31. *Number of mining students at Sibpur.*—The number of mining students at Sibpur in the last six years is shown in the following table :—

Year.	Preparatory class; common to mining and to mechanical and electrical engineering.	Junior class.	Senior class.	TOTAL.
1913-14	13	7	5	25
1914-15	19	7	6	32
1915-16	18	17	4	39
1916-17	19	24	6	49
1917-18	20	20	10	50
1918-19	35	25	14	74

In these figures, which have been furnished by the principal of the college, half the total number of students in the preparatory class have been counted as mining students. It is clear that the number of mining students is steadily increasing and that further accommodation will be needed for them.

32. *Development of the mining department at Sibpur.*—The establishment of the proposed school of mines on the coalfield, which would specialise in colliery work, would not render unnecessary the mining department at Sibpur, which should be maintained and extended with special reference to the mining of metalliferous ores, of various non-metallic minerals other than coal, and to oil-mining. That the Sibpur College may be able to undertake this work adequately we recommend the addition to the staff of its mining department of a lecturer on economic geology and of a lecturer on metallurgy and assaying; also that the department should be provided with an adequate laboratory and museum; that the present equipment for teaching the mechanical and electrical branches of mining should be considerably increased; and that the department should be provided with an adequate laboratory for assaying and metallurgy.

33. *Question of separation of training for higher and lower grades.*—The question of separating the higher training from the lower training now carried on alongside it in the Indian engineering colleges is one for serious consideration. Mr. L. F. Tipple, Professor of Mathematics at Roorkee, in a paper read before the Indian Industrial Conference in Calcutta in December 1917, urged the importance of the complete separation of technical education and industrial and the provision for each at its own type of institution, *i.e.*, technical colleges of university rank for the higher grade and continuation trade schools in industrial centres for the lower grade. We have seen in paragraph 14 above that this view was in its general outlines endorsed by the Public Works Department Reorganisation Committee. It is also endorsed by the Industrial Commission.[1]

"It will be necessary," say the Commission, "for Government to consider the more general question of the part to be played by the existing engi-

[1] Report, para. 160.

neering colleges and the universities, in providing for the increasing need in India for scientific, technical and technological training. We feel convinced that as the development of the country proceeds the number of students will increase and that in consequence, at no distant date it will be found desirable to abolish the school departments of these colleges and to make provision for the education of subordinates in separate institutions."[1]

34. We concur in these views. We think it wasteful to employ teachers of the highest calibre for training foremen simultaneously with students of university rank. But we think with the Industrial Commission that a sudden change is not practicable and that we must wait until the number of engineering students increases before the Sibpur College can be converted into an institution solely for the training of students of the higher grade.

In regard to one point a change might perhaps be made without much delay. It has been suggested to us that the Dacca School of Engineering could provide training for all the subordinates required for the Public Works Department and so relieve the Sibpur College to this extent. We have not examined the proposal in detail, but if it is clear that Dacca can provide the necessary facilities and that the students will be replaced by students of a higher type at Sibpur we hope the proposal may be carried into effect promptly.

35. *Architectural education.*—We have seen in paragraph 13 above that the Public Works Department Reorganisation Committee have recommended that some training in architecture should be given to all engineering students. We are disposed to think that a systematic training might also be given at Sibpur to students who desire to become professional architects. In this connexion we had to consider two main questions (1) whether such training is needed in Calcutta and (2) whether, if the answer is in the affirmative, it should be given at Sibpur or elsewhere.

36. The Public Works Department Reorganisation Committee said on this point[2] :—

"We are convinced of the necessity for one good school of architecture in India, and Bombay is the most suitable centre and will probably meet all requirements for the time being. Provision should also be made, at places

[1] The institutions of lower grade the Commission would place under the control of Directors of Industries.

[2] Report, para. 57.

where a demand for such men exists, for the training of architectural draughtsmen in the various technical institutes and schools of art."

37. Mr. H. A. Crouch, the Consulting Architect to the Government of Bengal, in giving evidence before the Committee in February 1917, said :—

"If a separate school of architecture were opened in Bengal he was not certain that there would be sufficient openings for the students to begin with, but they were bound to arise in time. One good school in India was all that was required at present."[1]

But, owing to the changes in the situation, Mr. Crouch expressed a different view in giving evidence before us a year later. In a memorandum based on his oral evidence he writes :—

"It appears to me most desirable that a school of architecture should be established here [*i.e.*, in Calcutta]. With the present rapid growth of this city and considering the amount of decentralisation suggested by the report of the Public Works Department Reorganisation Committee recently published there should be plenty of scope for men who pass through such a school and subsequently fit themselves for the practice of architecture."[2]

Mr. C. F. Payne, Chairman of the Calcutta Corporation, stated to the Commission that "there should be a big opening for architects in Calcutta. The work is usually done by engineers."[3]

38. A school for architecture in Calcutta might be suitably established either in connexion with the School of Art, where instruction is now given to architectural draughtsmen, or at Sibpur. It is clear that each of these two institutions has its special advantages, the School of Art on the artistic side, Sibpur on the scientific. If the school were established at the School of Art its staff could give at Sibpur the special instruction needed by engineers, which would form only a relatively small portion of the engineering course.[4] But it would be more difficult, and probably impossible for the Sibpur engineering staff, to give at the School of Art the relatively larger amount of training in engineering required by students of architecture, which would include such subjects as materials, building construction, stresses and strains, reinforced concrete, etc. Mr. Crouch definitely prefers Sibpur to the School of Art on the ground that it would avoid duplication of staff. There is also the question

[1] Appendix to Report of the Public Works Department Reorganisation Committee, Volume II, Question 1145.

[2] General Memoranda, page 42.

[3] Question 15, oral evidence.

[4] Para. 13 above.

of actual site to be considered; there would be no difficulty in providing an adequate site at Sibpur.

39. Mr. Crouch suggests the establishment of a three years' course in architecture, with the present intermediate examination in arts or science for the entrance standard; and adds that on the completion of this course "a further two years' course in the office of a trained architect would be necessary ..... before a man could be considered thoroughly qualified to practise architecture."[1]

It seems to us that the University might quite suitably grant a degree in architecture in connexion with a course of this kind.

40. *Teaching staff in architecture.*—We quote *in extenso* the passages from Mr. Crouch's memorandum[1] relating to the teaching staff:—

"The architectural side of Sibpur should be placed under a professor of architecture who in the first case would probably have to be recruited from Great Britain. He should have had previous experience in teaching, should lecture on the history of architecture, mouldings, features and ornaments of the various periods, on the principles of design, on sanitary science and on town planning.

On the assumption that the staff of the Engineering College would be able to instruct both the architectural and engineering students in subjects common to them both I think a professor of architecture with the aid of one assistant master would prove a sufficient staff for the architectural side of the college, provided admissions are limited to 20 students each year. On the other hand, if the staff of the college were not available for the architectural students it would be found necessary to appoint two assistant masters. It would, I think, be an advantage for the engineer students to attend the course on town planning on the architectural side of the college.

A great deal must depend on getting the right type of man in the first instance as professor of architecture. Such a man could, I think, be recruited on a 10-year agreement, the first three years of which could be on probation, provided sufficient terms and a bonus at the expiration of the period were held out as an inducement. I suggest that he should be allowed free quarters and have the rights of private practice. He should receive a salary of not less than Rs. 800 per month in the first year, rising by annual increments of Rs. 50 until the end of his agreement and be allowed to contribute to a provident fund on a scale not lower than the railway provident fund, *viz.*, a compulsory contribution of $\frac{1}{12}$th of his salary, a bonus of 100 per cent. on his contribution and 4 per cent. compound interest. The above are the minimum terms a good man at all conversant with the conditions of life in Calcutta is likely to accept. It may prove necessary to improve the terms to induce the right type of man to join Government service for only ten years.

The assistant master would also in all probability have to be recruited from England in the first instance. I suggest that he should receive a salary of

[1] General Memoranda, page 42.

Rs. 400 with annual increments of Rs. 40 and the privilege of contributing to a provident fund similar to the one I have described."

41. *Residential arrangements.*—The residential arrangements at Sibpur which we have briefly described[1] in the first part of the report appear to us inadequate. We are of opinion that one or more hostels should be built without delay providing a number of single rooms. We would urge that unless suitable accommodation can be provided at an early date at Sibpur for the number of students who may be reasonably estimated as necessary to meet the needs of the engineering and mining industries, the residential restrictions should be removed. Non-resident students should be required, like the students of the other colleges, to live under carefully supervised and approved conditions[2]; and they should be required to attend as punctually as the resident students. The distance of Sibpur from Calcutta may no doubt make it difficult, but we think it would not be impossible to secure the fulfilment of these conditions. A prompt and adequate increase in the hostel accommodation might of course render the admission of non-resident students unnecessary.

42. *Facilities for Muslim students.*—We recommend that the present facilities for Muslim students should be continued.

IV.—Future government of the Sibpur Engineering College and relations with the University of Calcutta.

43. The present college at Sibpur is, as we have seen, a Government college.[3] The 'Governing Body', like the corresponding body for the Presidency College, has powers rather greater than those of the governing bodies of other Government colleges, especially the power of spending each year a consolidated grant; this, in the case of the Sibpur College, amounts for the year 1918-19 to Rs. 46,500, a substantial sum.

44. Mr. B. Heaton, the present principal of the college, writes on page 3 of his Quinquennial Report for 1912-13 to 1916-17:—

"I may definitely say that from the Principal's point of view the possession of a Governing Body merely increases work and does not appear to expedite either business or secretariat decisions. A Governing Body such as we have now, composed so largely of high officials absent for months in Darjeeling and touring constantly when in the plains, can seldom be called together. Experience has shown that they cannot meet conveniently more than three times

[1] Chapter XXIV, para. 40 (*k*).

[2] Chapter XXXIX.

[3] Chapter XXIV, para. 40 (*m*).

yearly—March, July and November or December. Much business has to wait these meetings; only the more urgent items can be settled in circulation."

The Principal in this passage appears to have in mind a 'Governing Body' of the present type entirely subordinate to the Department.

45. In a memorandum drafted by the Principal of the Sibpur Engineering College, and signed by six members of the teaching staff (with certain expressions of dissent to which we shall refer), the immense complexity of the present system of administration and the delays involved in carrying out any change are pointed out.[1] In regard to the actual administration of Sibpur College the only definite change which the staff propose is that it should be transferred from the department of education to a department of industries. They further suggest that the connexion with the University should be severed.

46. The complaint of the Sibpur staff against the University is based on three grounds.[2] In the first place they complain of the great difficulty and delay involved in getting alteration made in the course. We have summarised elsewhere the process as described by Mr. Heaton[3]; we fully sympathise with the view that changes in university curricula should be made with far greater ease than is the case at present and we have made general recommendations with that end in view.

47. The second ground of complaint is that persons who are not experts fix the percentages for a pass at the university examination and that to change the percentages to what the staff think reasonable and to what their students could easily respond would be 'a very heavy task.' But this ground of complaint appears to be theoretical; so far as we are aware no proposal has been made recently to increase the percentage for a pass at university examinations, nor has the proportion of passes been very high. We have dealt elsewhere with the general question of pass-marks, and hope that under the scheme which we propose each Faculty will be able to exact from each candidate the degree of proficiency which it regards as necessary to keep faith with the public in regard to the university certificates and diplomas. We do not regard the present

[1] General Memoranda, page 31.

[2] *Ibid.*, page 32.

[3] Chapter XXVIII, paras. 55-56.

examination scheme in civil engineering as satisfactory in principle because it appears to us possible under the scheme for students to pass the examination as a whole and yet be deficient in the knowledge of subjects essential for every civil engineer.[1] The scheme, which was framed presumably by the Faculty of Engineering compares unfavourably from the professional point of view with the regulations in the Faculty of Medicine. We have, in Chapters XVII and XL, indicated the general principles on which such examinations should in our judgment be based.

48. The third ground of complaint is expressed as follows:—

"For all practical purposes, the connexion with the University is disastrous and prevents the development of the college as a self-governing institution. Members of engineering and industrial firms (all very busy people and the future employers of our students) are effectively prevented from interesting themselves in the courses we teach and our arrangements for training and consequently in the type of lad we turn out and ask them to employ..... The practical value of the present connexion with the University is merely one of 'window-dressing.' We tell the public that we train for a university degree and this helps to attract students."

49. It is to be remembered that the only department of Sibpur College which is in any way related to or controlled by the University at present is the Civil Engineering Department, of which we have heard no complaints and which appears to be in a healthy condition; if the mechanical and electrical course had been controlled by the University the criticism of the staff would have been more easy to understand. But we think it would be difficult to show that the Sibpur College under present conditions has in any way been damaged by its connexion with the University. We shall return later to the question of relations with the engineering firms.

50. The memorandum of the Sibpur staff does not propose any change in the constitution or powers of the present 'Governing Body' of the College; but suggests that an—

... "enlarged Board of Visitors, or whatever name may be given to such a body should absorb the functions of the Faculty of Engineering and the Board of Studies in Engineering, also of the Joint Technical Examination Board, and it should be entrusted with the control of Engineering and Diploma courses throughout Bengal ..... This Board would include advisory boards for (*a*) Civil Engineering, (*b*) Mechanical and Electrical Engineering and (*c*) Mining, who would advise Government concerning the development of education throughout Bengal. From these advisory boards, a Board of Studies and

[1] Chapter XXIV, para. 40(*c*).

Examinations would be formed. This will provide for the proper co-ordination of syllabus, teaching arrangements and examinations which is now lacking and will enable practising engineers and employers to be very closely associated with this important work."

This new body would, according to the memorandum, conduct examinations and award diplomas and degrees. It would be the present Board of Visitors, described in Chapter XXIV, paragraph 40 (*m*), with slight additions and modifications.

51. Of the seven signatories to the memorandum, three have given evidence dissenting wholly or in part from the proposals in so far as they affect the University. Mr. R. N. Sen fervently hopes "for the day when the various branches of knowledge and intellectual pursuits shall find full and free scope for their healthy growth and natural development within the Calcutta University as in some of the modern universities of the United Kingdom."[1] Mr. T. H. Richardson writes[2]—

"I would not approve of a technical college giving a B.E. degree. A university degree should mean a good general as well as technical education alongside of students in other subjects. It is not a question of which system is best, but one system ought not to pretend it gives the same as the other."

Mr. B. C. Gupta[3] told us that he—

"was not in favour of separating the higher ranges of study from the University; there should be a faculty of engineering composed of practical engineers and the professors in engineering. Indians appreciate the University connexion. The degree popularises the profession."

The view that the universities should take part in higher technological training is endorsed by the overwhelming majority of our correspondents[4] and it is the view taken by the Industrial Commission.

52. After explaining the lines on which they think the engineering colleges should be developed into technological institutes, the Industrial Commission continue[5]:—

"We regard it as certain that public opinion will demand that these colleges shall be connected with the local universities and that the students shall be able to obtain university degrees. To this we think no serious objection can be raised, provided that the terms of association leave the colleges free to frame their own courses of study, reserving to the Senates of the Universities the right to prescribe which shall be selected as qualifying a student to enter for a

[1] General Memoranda, page 37.
[2] *Ibid.*, page 42.
[3] *Ibid.*, p. 105.
[4] Chapter XLVIII, para. 8.
[5] Report, para. 169.

university degree. The internal administration of the colleges should be controlled by a Board or Council, the members of which might be nominated by the Department of Industries, the University, and public bodies representing employers. This Council should have the privilege of delegating a certain number of its members to represent it on the Senate."[1]

53. The proposals of the Indian Industrial Commission are in general accordance with our own views on this matter; and we propose that Sibpur College should become a constituent college of the University with a constitution similar to that which we have proposed for Presidency College.[2] We regard it as essential for its welfare that it should be brought into close touch with the new Indian Institute of Engineers and with the great engineering firms in Calcutta and that they should be interested in its management.

54. We subjoin as an appendix a certain number of opinions furnished to us by some of the great engineering firms of Calcutta in regard to (1) the likelihood of an industrial development and of an increased need for engineers trained in India after the war, (2) the question of freeing Sibpur Engineering College from Government control and transferring its management to a Governing Body on which the engineering firms as well as Government would have substantial representation, (3) the willingness of the firms to admit to their workshops, either before or after they have finished their college course, or possibly on the 'sandwich' system, a number of Sibpur students duly qualified and individually approved. These questions are closely related, and we attach importance to the opinions expressed in regard to them. We believe with the Industrial Commission and with the majority of the firms whom we have consulted that the demand for engineers trained in India is bound to increase; and though some firms are doubtful as to whether India can ever train responsible engineers we think the successful experience on the civil engineering side, and the fact that there are now successful chemical works, porcelain works, tile works, and tanneries in Bengal entirely run and managed by Indians shows that there is every reason to believe that Bengal

[1] It is clear that the Indian Industrial Commission mean by the Council a body with much wider powers than the present 'Governing Body.' In another passage in their Report, para. 178, they say of the colleges that "their expenditure should be administered and their teaching controlled by joint boards on which the Department of Industries, the local University, and the employers, should be represented.

[2] Chapter XXXIV, Section XIV, more especially paras. 158-160.

will be able before long to produce highly trained Indian mechanical engineers. But for that development to take place successfully we feel that the concurrence of the engineering firms is essential. Their help is essential both in the management and guidance of the colleges and for the provision of the workshop training. The memorandum shows that some of the most important Calcutta firms are willing to assist in both directions. But their assistance would, we feel, be more readily secured under a system which did not require the creation of any important post and the consideration of any substantial fresh expenditure to be referred to Government, as at present.

55. We believe that the important Government departments dealing with engineering, including the new Imperial Department of Industries of which the Industrial Commission propose the creation, the public authorities in Calcutta dealing with engineering such as the Municipality and the Port Trust, and the large engineering firms in Calcutta could together provide the major part of the personnel of a Governing Body to which Government, with due safeguards for audit and inspection, could hand over the control of the Sibpur Engineering College with perfect security. Such a body would be able to act with an efficiency and expedition impossible under the present arrangements.

56. *Proposed Governing Body of Sibpur College.*—We suggest that the Governing Body of the College should be constituted as follows :—

One member appointed by the Government of India to represent the Imperial Department of Industries, if such a Department is created.

Seven members appointed by the Government of Bengal, provision being made for the representation of the Public Works Department, the Department of Public Instruction, the provincial Department of Industries, if established, Railways, Engineering Industries, Mining and Architecture.

The Principal of the College, *ex-officio*.

Two members appointed by the Academic Board of the College.

The Vice-Chancellor of the University, or if he is unable to serve some person appointed to act in his stead by the Executive Council of the University, and one other university representative appointed by the Executive Council.

Two persons co-opted by the Governing Body to represent Engineering Industries (if the Governing Body constitute a Board of Visitors, these two persons to be elected by that Board).

Two or more persons appointed by the Indian Institute of Engineers, when constituted.

One person appointed by the Mining and Geological Institute.

One person elected by the Bengal Chamber of Commerce, to represent Engineering Industries.

One person elected by the Faculty of Science of the University.

57. We think the Chairman should be appointed in the first instance by the Government of Bengal for a period of (say) five years, but that his successor should be appointed by the Governing Body from among their own number.

58. The members of the Governing Body, other than *ex-officio* members, should be appointed for a period of (say) four years, and should be re-eligible.[1] Provision should be made for the simultaneous retirement of half the members.[2] We think that any member absent from Calcutta for more than six months should vacate his seat on the Governing Body. The Governing Body should be required to meet not less than six times in the year; and not less than three of the meetings should be held at the college itself. In view of the considerable representation of business men on the Board we think that some of the meetings might conveniently be held in Calcutta. We think it undesirable that the principal should, as at present, be required to act as secretary to the Governing Body, and that it should have a special secretary.[3]

59. *Outline of powers and duties of the governing body.*—We think it would probably be convenient to establish the governing body under a charter with definite rights and responsibilities. Government might be willing either to hand over the land and buildings to the governing body under conditions which would preclude the real property from being alienated or mortgaged or

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[1] An exception might be advisable in respect of the representative or representatives of the Academic Board. Retiring members of the Board should not be re-eligible until after a certain period.

[2] The rota might be established by arranging that the initial period for half the members, selected by lot, should be six years instead of four.

[3] We think that the principal should be in active contact with the teaching work of the college and should not have the greater part of his time taken up with secretarial work or details of routine. The Dean of the largest engineering college in London, the City and Guilds College, who fulfils the functions of principal, is also a university professor of engineering and takes an active part in the teaching and investigation carried on at the college. The fact that Sibpur is a residential college must necessarily however make the administrative duties of the principal heavier than those of the principal or dean of a non-residential college.

used for any purpose not defined in the Charter; or (2) it might transfer the real property to Trustees on behalf of the governing body; or (3) it might retain the real property and transfer the user of it for purposes specified in the Charter to the governing body. We think either the first or third course would probably be simpler than the second.

60. Government should undertake to pay to the governing body an annual sum of a stated amount (subject to periodic revision) to provide for the expenditure of the college. We hope that endowments and gifts might be received both for plant and annual expenditure from private benefactors and especially from firms interested in the success of the college; but the main expenses of the college would no doubt have to be provided as in the past from Government funds. We think the expenditure should be audited by Government auditors; and the college should be required to furnish to the Governments of India and Bengal an annual report on the working of the college together with the audited accounts. The governing body would (subject to certain important rights of the Academic Board) manage the affairs of the college generally. They should be empowered to appoint advisory committees to include persons not members of the governing body; and, subject to restrictions in regard to the expenditure of money and to the provisions of the Charter generally, such committees might in some cases, in addition to advisory powers, receive executive powers. By means of such committees the governing body could secure a wider range of advice than could be represented on the governing body consistently with its being of a manageable size. The governing body should have power, after report from the Academic Board, to fix the fees, the conditions for admission, the curricula, and all regulations for the award of certificates and diplomas other than university degrees or diplomas.

61. *Appointment of the staff of Sibpur College.*—As in the case of Dacca University and the other Government colleges the question of staff offers special difficulties.[1] All the senior members, and the great majority of the other members of the staff, belong—as we have seen in Chapter XXIV—to the Indian Educational Service, the Provincial Educational Service or the Subordinate Educational Service.

[1] Chapters XXVIII, paras. 93-116, XXXIII, paras. 52-57, and L, paras. 21-28.

62. In regard to the question of staff the Public Works Department Reorganisation Committee reported as follows :—

"The question of the sources from which the professorial staff should be recruited is one upon which we received a considerable amount of evidence and several witnesses have suggested that it would be advantageous to recruit a larger proportion of the professors of engineering from officers of the public works department with practical experience of engineering in India. We consider that such teaching appointments would not be likely to attract suitable officers, as the best engineers would probably be unwilling to abandon their practical work for professorial posts and that, even if good engineers were attracted, they would not necessarily make good teachers. In general the existing staffs appear to us to be satisfactory, and we recommend a continuance of the present system of direct recruitment; we would however make an exception in regard to the post of principal, leaving it to the local Government concerned to fill vacancies by the appointment of an engineer or of an educational officer, as may be most suitable. Subordinate posts in the college may be filled, as at present, by a proportion of subordinates of the public works department, but great care should be exercised in selecting them. It would also, in our opinion, be advantageous to arrange for senior officers of the department or distinguished private engineers to give from time to time courses or single lectures based on their experience of practical work. In time it may also be desirable to create honorary chairs to be filled by distinguished members of the profession, who would give a course of lectures on the lines followed at medical colleges."[1]

63. In regard to this matter the Indian Industrial Commission report as follows :—

"The provision of teachers for the various grades of education described in this chapter is not a question that needs discussion at any great length. For instruction in the higher branches of engineering and technology, we must look to the University colleges and technological institutes to provide teachers. They will be trained under the influence of men of high attainments engaged in original work, who will present their subjects in a way that will evoke a real and abiding interest among the students, and ensure that men who pass through their classes are thoroughly imbued with a clear knowledge of their subject and of right methods in dealing with it. Some of these will be fitted for teaching work by a natural capacity for the clear exposition of ideas. It must be remembered that research and what may be termed 'workshop practice' are themselves the best possible training for those faculties which a teacher largely uses, and that in consequence, in the case of subjects outside the line of general education, special training schools or colleges are unnecessary and even likely to be a disadvantage. There is not the least probability that educational appointments will fail to attract men who have been trained for technological or industrial work. Compared with factory life, the work of a teacher in a school or college offers inducements to a very large number of persons who prefer a certain amount of ease and freedom from worry to the strenuous existence which is essential to success in manufacturing

[1] Report of the Public Works Department Reorganisation Committee, para. 88, page 76.

concerns. Appointments as teachers will naturally be sought after by men who feel that they have some special aptitude for such work, and provided suitable selections are made, actual experience in teaching will ultimately produce the high type of men required."[1]

64. We feel considerable doubt whether the present service system will secure in future the right kind of teacher for first rate teaching of mechanical and electrical engineering. It is held in, we believe, the majority of universities and higher technological institutions of the present day, both in Great Britain and in America, that it is of importance to the efficiency of a technological department that its head should be kept in touch with current advances by the opportunities of private consultant practice, provided that this is not allowed to take up an undue share of his time. We discuss this point at greater length in its application to technological teaching generally in Chapter XLVIII, paragraph 23; we need only say here that in no subjects does it seem to us more necessary that the teachers should be in touch with actual practice than in civil, mechanical, electrical and mining engineering; and we think that, subject to the approval of the principal or of the governing body of the college, the head of each department of the college, and possibly some senior assistants, should be allowed to take a certain amount of consulting practice. We think it probable that the college might in future be more likely to attract the men whom it needs if it were in a position to offer short-term appointments with a substantial bonus for the occupant at the end of the term, as an alternative to life appointments with a pension only obtainable at the end of long service. It ought to be free to vary the conditions of service so as to secure the best men available within the limits of its resources. For many years to come the majority of the staff of the college, especially on the mechanical and electrical side, must necessarily be drawn from engineers trained in Europe or America, of whom many will be unfamiliar with Indian conditions and will require safeguards in respect of their tenure of office not less reassuring than the present Government safeguard. We have shown elsewhere in what way we think such safeguards can be given.[2]

65. In cases where the governing body desires the head of a department to have the title of professor or reader in the Uni-

[1] Report of the Indian Industrial Commission, para. 176.

[2] Chapter XXXIII, para. 55.

versity it would make use of the arrangements described in Chapter XXXIV, paragraphs 112-120 under which it would secure the help of engineering specialists either in England or in Calcutta in the selection of the best candidates, but retain the ultimate right of veto in case the governing body disapproved of the choice made. As the governing body would be represented on the Committee of Selection, whether that Committee met in London or in Calcutta, such a veto would, we imagine, be rarely used.

66. In cases where university titles were not desired by the governing body for the occupants of particular posts they would be free to make their own selection, subject to the general conditions laid down for constituent colleges.[1] It is clear that if the University is to take the responsibility of guaranteeing the satisfactory character of the courses attended by students to whom it grants a degree it must have effective safeguards to secure that the staff who deliver those courses have qualifications regarded by the University itself as adequate.

67. The present Board of Visitors[2] meets very rarely and takes but a small part in the affairs of the college. We have some doubts as to the precise value of such a body, with almost purely nominal powers. We think that it should not be continued as a statutory body under the Charter which we propose, but that the governing body should be empowered under the Charter, if they see fit, to re-establish a Board of Visitors; and that if they do so the Board should elect two of the members of the Governing Body to represent engineering industries. The Board, if constituted, should include a wider representation of the engineering interests of Calcutta than at present; and should be invited to meet at least once yearly to inspect the college and to receive and consider the annual report. The Board might conveniently furnish members for the advisory committees which the Governing body is empowered to appoint; but, under the constitution which we propose, the governing body would not, we think, have any difficulty in finding the members for such advisory committees by direct application to the members of the engineering profession in Calcutta.

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[1] See Chapter XXXIV.

[2] Chapter XXIV, para. 40 (*m*).

68. *The Academic Board.*—There should be an Academic Board consisting of—

(1) the heads of departments of the college,

(2) other teachers of the college appointed in such manner as the Governing Body may decide.

This body would correspond roughly to the present 'College Council,' informally constituted by the principal, with some additions.

The principal should be the Chairman of the Academic Board. The Board should settle all details of time-table and curricula subject to the general regulations of the governing body, and would play an important part in the administration of the college; it should meet regularly and have power to report to the Governing Body on all academic matters and on the management of the college generally. It should keep minutes of its proceedings. As the work of the college grows it may be necessary for the Academic Board to have specialist committees to deal with the various subjects of the curriculum; but this is a matter for later consideration. The teachers would of course be represented on the advisory committees constituted by the Governing Body.

69. *Relations of the Sibpur College with the University of Calcutta.*—The college should be a constituent college of the University of Calcutta[1] and as such would have representation on the Court and the Academic Council.[2] The Faculty of Engineering would be composed of the principal teachers of the college together with a certain number of experts in engineering; and the Academic Council would also include, besides teachers of engineering, a certain number of external experts in engineering. It is probable that some, at any rate if not all, of these experts would also serve on the Governing Body of the Sibpur College.

The conditions for degrees, diplomas and other distinctions within the purview of the Faculty would be regulated by the Faculty subject to the control of the Academic Council and in the case of more important matters by ordinance.

70. It is to be remembered that, unlike the present Senate, the Academic Council will be constituted almost entirely of teachers

[1] Chapter XXXIV, Section XII.

[2] Chapter XXXVII, Section VII.

together with experts in certain professional subjects; and apart from questions affecting general University policy, each Faculty will in effect manage its own affairs. It is mainly in regard to such matters as entrance qualifications and the total length of the university course that the Academic Council may be expected to stipulate that the requirements of a particular Faculty shall not fall below the minimum; in other matters each Faculty should have great freedom to regulate its own courses and requirements for examinations.

71. We believe that the scheme that we propose will lead to harmonious working between the Engineering College and the University and that the connexion will be beneficial to both; to the college because of the prestige which it will gain from the opportunities offered to its students to obtain university degrees and because of the contact of its teachers with teachers in the allied subjects of chemistry, physics, geology, and mathematics; to the University, reciprocally, because of the variety given to its studies and of the breadth of view gained in discussions affecting university policy as a whole by the representation of engineering interests.

72. In dealing with the relations between the college and the University we have not yet touched on architecture, which, though it can be conveniently taught in the same institution as engineering, has closer relations on its artistic side with the Faculty of Arts than to the Faculty of Engineering.[1] We think the Faculty of Engineering should constitute in the first instance a Board of Studies in Architecture of which a certain number of members would be chosen from the teachers in the Faculty of Arts dealing with subjects cognate to architecture; but we prefer not to make more detailed suggestions in regard to this matter. The constitution which we propose for the University is sufficiently elastic to enable it to provide for the academic needs of architecture as they gradually develope.

V.—University degrees in engineering.

73. As we have pointed out in Chapter XXIV[2] new regulations have recently been introduced in engineering in the University

[1] Paras. 35-40 above.

[2] Para. 40 (*c*).

allowing the two examinations in engineering to be taken 'by compartments.' We think the principle adopted is sound; but the regulations in their present form present a number of ambiguities as to the sense in which the words 'subject,' 'branch' and 'aggregate of marks' are used, and these ambiguities, which materially affect not only the fate of individual candidates, but the actual character of the degree, should be removed. It is for the University, for instance, to determine clearly whether a student should be required to show a minimum knowledge of 'applied physics' or of 'applied chemistry,' or whether he should be allowed to pass with zero marks in either subject provided that he reaches a determined aggregate; and again the University must determine clearly whether, where the word 'aggregate' is used in reference to an examination which may be taken in two sections, the aggregate refers to each section taken separately or to the two sections considered together. We do not wish to prejudge the answers to these questions. They must be considered in the light of the purpose of an engineering degree as a whole and the nature of the guarantee which the University wishes to offer to the public in respect of every student who takes it.[1]

74. The question of guarantee raises another point of fundamental importance. It is generally accepted that no person is fit to undertake responsible work as an engineer at any rate in the civil, mechanical and mining branches without practical training in an office, in works or in the field; though we believe that a certain number of electrical engineers have taken responsible posts immediately on the completion of a college course. Considering the first three branches only, the question arises whether the University should (1) give a guarantee only in respect of 'engineering science,' meaning the science on which engineering is based, and for which it can make itself fully responsible; or whether (2) it should also make itself responsible for the practical work done by the student outside the University, and give a guarantee in respect of 'engineering.' The University of London and some other universities, accepting the first alternative, give degrees not in engineering but in engineering science, the title of such degrees being B.Sc. (engineering). The general argument adopted in favour of this view is that a univer-

[1] Chapter XVII, paras. 38-45, and Chapter XL, paras. 1-2.

sity cannot properly judge of practical training and that such practical training should be certified by a diploma of a professional body such as the Institution of Civil Engineers or the Institution of Mechanical Engineers or the Institution of Mining and Metallurgy. At present no such body of corresponding status exists in India, although a general engineering institution is in course of formation.[1] We have some doubt as to whether such a body would be actually better qualified to form an opinion as to the value of practical work than a faculty of engineering partly composed of teachers, partly of practical engineers such as we suggest for the University of Calcutta. An all-India professional institution would, however, have certain advantages over a university in being able to deal with engineering firms in relation to the conditions of employment of engineering students all over India. It will take some time before the certificates of such an institution can be recognised in India, and in the meantime the University must decide on its own policy. If it continues to use the title bachelor of engineering, we think it should insist (as does the University of Madras) on a period of certified practical work as a pre-requisite to the degree. But we would suggest that the question of such practical requirements might be discussed at an early date between the university authorities in the various presidencies and provinces and the new engineering institution, after which each university would be free to adopt its own policy in this matter.

VI.—Some suggestions of the Indian Industrial Commission for the development of engineering education.

75. The Indian Industrial Commission make certain suggestions in regard to the development of engineering education on which we wish to comment, with special reference to conditions in Calcutta, which differ in some respects from those in other engineering centres.

76. The Commission anticipate that industrial expansion will justify the starting of departments of general technological chemistry in the engineering colleges which, in each college and teaching university, will specialise to the extent necessary to meet at any rate the more prominent local needs.[2] We deal with the question

[1] Para. 78 below.

[2] Report, para. 160.

of industrial chemistry in Chapter XLVIII. But there are two considerations specially affecting Calcutta and the Sibpur College which ought to be mentioned here. In the first place Sibpur is remote from the oil mills, the tanneries, and the majority of the other chemical works of Calcutta, which are mainly situated on the north side of the city; and the department in dyeing established at Sibpur was a failure.[1] It seems to us clear that the technical departments in chemistry should be in close touch with the departments of pure chemistry in the other Calcutta colleges (including the University College of Science) so that promising students should be passed on from the latter to the former. On the other hand, it is increasingly felt in western countries that apart from the industrial chemist there is need for the chemical engineer, who is required to have a sound knowledge of certain branches of engineering as well as of chemistry. Special courses for students aiming at such a career might later be arranged at Sibpur.

77. The Indian Industrial Commission foreshadow the creation of two Imperial colleges of technology, one for all branches of engineering, the other devoted mainly to metallurgy and mineral technology.[2] "Provincial colleges," they say, "can only hope to secure the services of good all-round men who would be employed mainly in teaching work; but if the ideal of a self-sufficing India is to be carried out, specialisation must be provided for and this can only be achieved in colleges with a large number of students."

We have in several places in this report emphasised the idea that it may be more economical to provide for the needs of higher technological teaching by one or more Imperial institutions than by purely provincial ones; and we are entirely in sympathy with the views of the Indian Industrial Commission in regard to the desirability of Imperial aid in providing and organising such teaching, but we desire to enter a caveat against the precise form of the proposals of the Indian Industrial Commission. We think that it may both be more economical and convenient in certain cases to provide for Imperial and local needs in a single institution situated in a suitable district rather than in separate institutions. We may choose

[1] Chapter XXIV, para. 17.

[2] Report, paras. 161, 171, 172 and 374. We have discussed, in paras. 27 and 30 above, certain questions relating to the proposed Imperial Institution for Metallurgy at Sakchi.

an illustration from British experience to illustrate our meaning. When the Imperial College of Science and Technology was established in London it was stated in the report of the Committee which led to its foundation[1] that while that college should specialise in the metallurgy of metals produced in India and the colonies but not found in workable quantities in the United Kingdom (*e.g.*, gold), it would probably be undesirable for it to provide for the advanced treatment of the metallurgy of iron and steel, in view of the provision for it at other centres; and specialisation in the metallurgy of iron and steel has been left mainly to the University of Sheffield, Sheffield being one of the centres—though by no means the only centre—of the iron and steel industry. Both the Imperial College in London and the University of Sheffield serve imperial as well as local needs. Both institutions receive large grants from the local authorities and from Government funds. To have isolated the iron and steel department in Sheffield from the general University work would have been wasteful and would have weakened that University unwisely. Calcutta is one of the greatest, if not the greatest, of the centres of the engineering industry in India; and while we think it would be premature to advocate that Sibpur should be made an Imperial as well as a provincial college for mechanical and electrical engineering, yet we think that in the interests of economy and efficiency such a combination should not be excluded from consideration. By the removal from the Sibpur College of the lower grades of pupils to another kind of technical institution in accordance with the recommendations of the Public Works Department Reorganisation Committee, and the Industrial Commission and our own, there would be provided on the college site ample accommodation for an engineering college on a scale equal to or larger than that of any existing one in Great Britain.

78. We desire, in conclusion, warmly to endorse the plea of the Indian Industrial Commission that an Indian Institution of Engineers should be created in India, generally similar in constitution and aims to the Institution of Mechanical Engineers in England and that Government encouragement and assistance should be given to such an institution. We see no reason why such

[1] Final Report of the Departmental Committee on the Royal College of Science, etc. (Cd. 2782, 1906), page 29.

an institution should not cover the whole field of engineering, civil, mechanical, electrical, and mining. It would, we believe, contribute materially to the rapid advancement of engineering education in this country, and we are glad to learn that steps are being taken which will ensure its foundation at an early date.

APPENDIX.

VIEWS OF CERTAIN ENGINEERING FIRMS IN CALCUTTA IN REGARD TO THE FUTURE OF THE ENGINEERING INDUSTRIES IN CALCUTTA AND THE MANAGEMENT OF SIBPUR ENGINEERING COLLEGE.

Messrs. Turner, Morrison & Co., Ld.—"We think there is no doubt that there will be rapid industrial development in India after the war, and that there will be a large demand for engineers in consequence. It must be remembered, however, that there will be a large number of engineers thrown out of employment when this war is over, not immediately perhaps, but by degrees, as the great munition shops and factories at home and all over the world gradually shrink to more normal dimensions. We are of opinion, however, that if the Sibpur Civil Engineering College can turn out engineers as well trained for higher posts, and as trustworthy as the men that can be brought out from home, the Sibpur men will certainly find employment.

We are strongly of opinion that Sibpur College will never turn out men such as are likely to inspire confidence amongst the engineering firms of Calcutta until a drastic change is made in its constitution. It must undoubtedly be free from the restraint of Government control and guaranteed against Government interference.

If the Sibpur College is to develope on useful and successful lines it can, in our opinion, only be done with the co-operation of the mercantile community.

We think the Governing Body should include Government representatives, representatives of such bodies as railways, Port Commissioners and others on whom engineering firms depend for orders, representatives of the engineering firms and teachers. We regard a combination of all these elements as essential for the success of the college.

There is no reason why the Sibpur man, if properly trained, should not be certain of finding employment, provided that the course of training which he undergoes teaches him trustworthiness as well as professional ability. If the Indian and Anglo-Indian trained at Sibpur are to supply the demand of India for engineers capable of taking responsible charge, putting aside all question of technical knowledge, they must, in our opinion—

(1) be drawn from the proper social stratum and be able to live at Sibpur under corresponding conditions;

(2) have all facilities for games and for development of character, and have many opportunities of contact with the superior staff of the college outside the class-room and laboratory.

We hold the view that an engineering college can only provide a part of the education of an engineer and that the other part must be provided by actual training in the workshops. We would gladly entertain the idea of admitting to our workshops duly qualified Sibpur students, individually approved by us, in the event of it being decided to remodel the college."

Messrs. Kilburn & Co.—Messrs. Kilburn & Co. have kindly communicated to us statements made by the Superintending Engineer of the India General Navigation and Railway Company and the Manager of the Russa Engineering Works.

The Superintending Engineer of the India General Navigation Company writes :—" I am extremely doubtful if Indian students who had finished a college course at Sibpur and subsequently spent several years in the workshops of this dockyard as apprentices would qualify for posts as foremen or as engineers capable of taking responsible charge on this Company's engineering staff. In the case of lads drawn from the domiciled community the matter is more hopeful, and they would be all the better equipped for their duties by having received a preliminary training in an engineering college.

If it will increase the usefulness of Sibpur College in any way, a limited number of approved lads, say up to a dozen, could be taken on as apprentices here after they have completed their college course, but they would need to understand that they would have to begin right at the bottom of the ladder as apprentices do in engineering works in the United Kingdom. They would be given every encouragement, and as to whether they would ultimately qualify for any position of responsibility in the Company's service depends principally on themselves.

No premium is required with an apprentice here, and as regards remuneration the rules are :—

1st year	Without pay.	
2nd ,,	Rs. 12	per mensem.
3rd ,,	20	,,
4th ,,	30	,,
5th ,,	40	,,

Hitherto only lads drawn from the Domiciled Community have been taken on as apprentices. Recently a young Indian who had served an apprenticeship in a large local Engineering Works was engaged as an assistant engineer in one of our up-country workshops, but was such a pronounced failure that his services had to be dispensed with. This so far has been our only experience of the Indian engineer trained in India and it proved to be anything but encouraging."

The Manager of the Russa Engineering Works writes :—

" Several attempts have been made at these works to cope with the demand for men trained in engineering and high grade machine and fitting work, such as is produced by us at Bhowanipore. We often find ourselves in a very difficult position when the necessity arises of filling up gaps in our Indian staff in the machine shop, for the simple reason that the work carried out by us is of an entirely different nature to that performed by any other engineering firm in India, and, consequently, suitable applicants not being forthcoming, vacancies have to be filled by men trained in our works.

My experience of the average Indian apprentice has led me to believe that few, if any, are desirous of working through the usual machine shop curriculum in a similar manner to the course adopted by apprentices at home.

In regard to the question of Sibpur College men as possible candidates for posts as foremen, experience has taught me that few, if any, of these men seem to be satisfied with such an idea, and are more prone to imagine that

they should be able to take over the management of a works without passing through the usual intermediary stages.

I do not feel qualified to discuss from a comprehensive point of view the problems raised, seeing that the branch of engineering in which I am directly interested is only one of many, each of which possesses its own peculiar problems. Writing, however, from my own point of view, which is considered merely from the manner in which the problems under discussion affect the Russa Engineering Works and its future policy, I must frankly state that I view with disfavour the employment of Sibpur College trained men, either as foremen or as trained engineers. In my opinion an Indian college trained man without home experience is not, under any circumstances, capable of taking complete charge of a modern engineering plant. His outlook on life is materially different from that of the average youth who has passed through a course of training in an engineering works at home, whilst his mentality has not undergone that beneficial change that a course of home training produces in the mind of those who experience it.

It does not seem possible for the Indian college trained man to amass sufficient practical experience, with the result that at the end of his training he emerges in possession of a sound theoretical knowledge but lacking sufficient practical knowledge to enable him to take up any administrative appointment with an engineering establishment. Undoubtedly there are engineering firms in India to whom a man of this type is most useful, but the real essentials that contribute to the making of a good Shop Manager are lacking in a man who has been trained in such a manner. Not having passed 'through the mill' he has not acquired the knack of handling labour, and when confronted with other problems, which can only be settled by a man possessing sound practical knowledge, usually he finds himself unable to cope with the situation. In other words he is a failure as 'an engineer capable of taking responsible charge.'

For our workmen whose only qualification consists of a training in an Indian college are useless as foremen or charge hands, and intelligent *mistris* who have learnt their work in our shops are preferable, even though their theoretical knowledge may be slight.

I agree that the Sibpur Engineering College would be more likely to develope on lines useful to works like our own if it were freed from the restraints of Government control, and managed by a governing body on which engineering firms would have substantial representation. I remember well the beneficial result of a change of this nature which was effected at Coventry in connexion with engineering day classes held there, but before stating whether such a change would be supported by us, I would like to know to what extent we would be expected to support it. The 'sandwich' system though, perhaps, commendable from the students' point of view is most inconvenient for an engineering works.

We have already given the sandwich system a fair trial and have found it a failure.

I am prepared to admit to our works a limited number of students, either before or after they have finished their college course, provided that they conform to the rules and regulations of this works and do not expect to be able to attend their duties at any hour convenient to themselves. Moreover, I can only consent to such an arrangement if the students will remain

in our employment without pay for at least two years, entering into an agreement with us to this effect. Our machines are far too valuable to be handled inefficiently, and any arrangement we enter into with the principal of the Sibpur College will have to be framed in such a manner that we still obtain the last 'ounce' from our plant."

Messrs. Jessop & Co. express the view that men required as mechanical engineers, whether in the capacity of foremen or engineers capable of taking responsible charge, have to take the position of leaders, and in their opinion the majority of engineers brought up in this country cannot fill the rôle, either in competition with the average home trained engineer working in India, or in such a way as to enable his employer to meet the competition of firms manufacturing in other countries. The firm would entertain the idea of admitting to their workshops, either before or after they have finished their college course, a limited number of Sibpur students duly qualified and individually approved by them. They think it very desirable that the views of prospective employers of the students of Sibpur Engineering College should be well represented on the governing body.

Messrs. Burn & Co. are of opinion that there will be a large demand for trained engineers in India after the war and that the mechanical and electrical side of the Sibpur College should be largely increased. They think it would be a great improvement if the college were managed by a governing body on which engineering interests and Government interests could be represented and thus free the college from the present close Government control. They would support such a change and give all help in their power to effect it. They are of opinion that after school a boy should have three years in a large engineering works followed by a two years' course at Sibpur. They do not approve of the sandwich system.

Messrs. Martin & Co. think that there is likely to be a great industrial development in India after the war; that there will be an increased demand both for foremen and for engineers capable of taking responsible charge and that there will probably be increased difficulty in obtaining engineers from Europe; and that the methods of training engineers in India both for the mechanical and for the electrical side of the profession need considerable development. They think the Sibpur College would be most likely to develope on lines useful to the great engineering works in Calcutta if it were managed by a governing body on which the engineering firms as well as Government had considerable representation. They would be willing to fall in with any scheme of training by admitting as apprentices to their workshops qualified students from the Sibpur Engineering College.

Messrs. Balmer, Lawrie & Co. think there is little doubt that considerable expansion in engineering lines will take place after the war, and that the supply of local engineers will not only be a convenience but a matter of necessity

if development on these lines is not to be hampered. They think that the transference of the control of the Sibpur College from Government to a governing body on which the engineering firms as well as Government had considerable representation would be an excellent step towards ensuring a supply of engineers, for in order to command the interest of the mercantile community they should be made in a degree responsible for the working of the college. They would be happy to train both in their mechanical and in their electrical workshops a certain number of students after their preliminary training at the Sibpur College. They have been in the habit for some years of taking apprentices in their electrical shops.

The River Steam Navigation Company, Limited, think it certain that there will be a great industrial development in India, whether it starts immediately after the war or not, and that there will be a great and increasing demand for locally trained assistants. They would give their firm support to any changes in the Sibpur College likely to result in making available more sound mechanical engineers with a good theoretical education. They are strongly of opinion that mechanical engineers should receive both workshop and college training and that the college training should follow the workshop training, if it is not taken at the same time. They would gladly entertain the idea of admitting to their workshops young men intending to follow a course of this kind. Their efforts so far in this direction have met with practically no success.

Messrs. Andrew Yule & Co. fully concur in the view that it will be necessary to train engineers in India capable of taking more responsible charge than at present in order to meet the requirements of the future industrial development of the country. They are of opinion that the Sibpur College would be most likely to progress on lines useful for the great engineering industry in Calcutta if it were freed from the restraints of Government control and managed by a governing body on which the engineering firms as well as Government would be substantially represented.

CHAPTER XLVII.

Agricultural Education.

1. In Chapter XXV of this report we have pointed out the supreme economic importance of agriculture for Bengal, and the absence of any agricultural education of a university character in the Presidency; we have given a brief account of the development since 1904 of the policy of the Government of India and of the pronouncements of the three recent conferences, at Pusa, Simla, and Poona, on agricultural education; and, in the light of that policy and those pronouncements, and of the weighty evidence placed before us, we have discussed the arguments for and against establishing a scheme of agricultural education of a university character in Bengal.

Taking into account all these factors, and especially the avenues of employment both for agricultural experts, and for experts in the sciences on which agriculture is based, we are of opinion that the University of Calcutta (and, later, possibly, other local universities) should take a real and important part in the agricultural education of Bengal, though great caution must be exercised at first in regard to the number of students to be trained, so that the market may not be flooded.

2. After careful consideration of the evidence put before us and after further discussion between some of our members and Mr. Milligan, the Director of Agriculture for Bengal, to whose courtesy we are greatly indebted, we desire to suggest a scheme of which the main features, though not all the details, are, we believe, in accordance with Mr. Milligan's present views. We shall indicate points in which we diverge from his experienced judgment and from the scheme recently laid before the Government of India by the Senate of the University of Calcutta.

We are happy to find that our conclusions on this point are identical in their main lines with those of the Universities Commission of 1902.[1]

[1] Report paras. 146-148, and page 68.

3. The main features of the scheme are three :—

(*i*) Training in Calcutta, in the sciences fundamental for agriculture, *viz.*, biology (including bacteriology), chemistry and geology, for a period of three years after passing the intermediate examination[1] in mechanics, physics, chemistry and botany.

(*ii*) Training during three months of each of these three years on a university farm in the neighbourhood of Calcutta, supplemented by periodical visits to the farm during the academic year, so that the student may become acquainted with seasonal operations.

(*iii*) One, or preferably two, years' subsequent training in a Government Agricultural Institute (of the kind described in paragraphs 8 and 9 of the Memorandum by Mr. Milligan, printed in the volume of appendices to this report).

We propose that the University should give a degree in science (not agriculture) to successful students at the end of courses (*i*) and (*ii*) above ; and that it should confer the degree of bachelor of agriculture on such students who subsequently obtain the Diploma of the Government Agricultural Institute. Some of the students might prefer, after the conclusion of the three years' course, to go for post-graduate study in specialised branches to Pusa. We see no reason why, with a competent staff, such specialised study in certain branches should not be carried out by other students in the University laboratories in Calcutta, but it would lead to a higher degree in pure science, not to the bachelor's degree in agriculture.

4. An agricultural course is of necessity complex. Scientific agriculture involves the application of many different sciences, and we think the university course which we propose should include chemistry, geology, botany, zoology and bacteriology, besides agriculture taught as a special subject, and also the elements of agricultural economics and agricultural book-keeping. The most obvious way of providing such teaching, and the one most convenient for students, would be to set up a university agricultural

[1] This examination would be taken from an 'intermediate college' and not from the University—see Chapters XXXI and XXXII.

institute in Calcutta with specialist teachers in all the branches named. But it would also be the most expensive; and as, for reasons which we shall explain below,[1] we think that it would be unwise to provide training for a large number of students in the first instance, the establishment of an expensive institute in Calcutta would not at present be justified. We believe that a more economical means can be found for making a start by the utilisation of existing resources, with some necessary additions.

Although it is doubtless an advantage for agricultural students to have even the elementary portions of the sciences in question taught to them by persons who are aware of their special requirements, this is not a necessity; an agricultural student can learn a great part of his chemistry from a chemist who is not an agricultural chemist, and in a laboratory where ordinary elementary chemistry is being taught; provided that the general course be followed by a course on the methods and problems of agricultural chemistry given by a specialist on that subject, and similarly with other subjects. But there is no single institution in Calcutta at present which provides teaching in all the subjects of the agricultural curriculum, and it will probably be necessary therefore to make use of a certain number of institutions for the course which we propose. It is clear, however, that in devising a time-table for the complex scheme of lectures and practical work required by the student of agriculture the distance of some of the teaching institutions from each other must enter as an important factor, and that institutions otherwise suitable may for this reason have to be left out of the scheme and our suggestions are only tentative. We now take the several subjects suggested *seriatim*.

(*a*) *Chemistry.*

The Presidency College might, we think, be able to provide the general teaching in chemistry but arrangements would have to be made for courses on agricultural chemistry, including soils, manures, etc., and the question of laboratory accommodation would require special consideration. A number of the other affiliated colleges provide teaching in chemistry, but none have such adequate laboratories as the Presidency College. The University

[1] Para. 9 of this Chapter.

College of Science has large laboratories; these are at present entirely devoted to advanced work in pure science; but, if space could be found, the college might provide courses in agricultural chemistry for students who had taken their elementary courses elsewhere.

(*b*) *Botany.*

There are five colleges in Calcutta affiliated in botany, of which the only one affiliated up to the honours stage is the Presidency College. The chair at the college is held by Mr. J. C. Nag who is also a graduate in agriculture. In the University, Sir Rash Behary Ghose has established a chair of botany with special reference to agriculture, now held by Mr. Agharkar, who has been interned in Germany for the last four years; and there is also another university chair to which Dr. Brühl has just been appointed. It would seem natural to suggest that these two professors should take charge of the subject of agricultural botany. Both chairs are in part 'research-chairs.' The duty of the Ghose Professor, according to the terms of the endowment, is to carry out and guide others in research and to take part in post-graduate teaching; but possibly the delivery of special courses in agricultural botany might not be regarded as falling outside the terms of the trust. The work of the two professors will be carried on at the laboratories and in the grounds of Palit House in Ballygunj. We suggest therefore, though the proposal does not exclude other possibilities, that the teaching in botany might perhaps be provided at the Presidency College, which has two laboratories and a herbarium, and be supplemented by special courses in agricultural botany at Palit House. For this purpose the Presidency College Department would need, we think, some supplementary equipment and possibly extension. The collections illustrating systematic botany are comparatively small; and the systematic study of phanerogams should be developed. The University Department at Palit House will probably specialise in the advanced study of cryptogamic and agricultural botany; and its garden might be used for cultural experiments. We trust that in accordance with our general proposals for university organisation there will be co-operation between the University Department for advanced botany and the Department at Presidency College.

(c) *Zoology.*

The only teaching at present given in zoology is for the preliminary scientific course of the medical colleges (the Calcutta Medical College and Belgachia). The course for medical students would probably meet the needs of agricultural students, if it were supplemented by a special course on entomology, and one on parasitology dealing especially with protozoa and worms.

The University has established a chair of zoology to which Mr. S. Maulik has been appointed; we understand that he will carry on his teaching at Palit House. We understand also that the establishment of a chair of zoology at the Presidency College is in contemplation. The Department will need good teaching collections which could be handled by students. A suggestion has been made to us that the zoological collections of the Indian Museum might be used by students. But this is quite inadmissible. The use of the Museum collections is for reference in the investigation of the Indian fauna and they could not be handled by elementary students without the certainty of suffering serious damage.

The location of the teaching of zoology is a matter of some difficulty. If the department is established in the Presidency College the teaching might be given in that college together with the teaching of botany. If an institute is established under the aegis of the University as may be necessary for the teaching of the preliminary medical subjects[1], the zoological teaching might be given by the staff of this institute, which would be situated in close proximity to Presidency College; or it might be given at the zoological laboratories at Palit House if the time-table will allow. We hope that the zoological laboratories at Palit House may, like the botanical laboratories, devote especial attention to the applied side of the subject.

(d) *Bacteriology.*

A special course in bacteriology suited to the needs of agricultural students will be required, but this would not at first need the services of a full-time lecturer. A department of bacteriology is being created in connection with the Medical College and the Tropical School of Medicine; and it is probable that the staff of this

[1] See Chapter XLIV, para. 11.

department would be able to lend a competent lecturer at any rate in the first instance in order to start the course. The course itself might be given either in the zoological or the botanical department of the Palit Laboratory. The equipment for the number of students contemplated in our scheme would not be very costly.

(e) Geology.

The Geological Department at the Presidency College could supply all the teaching required in this subject. Special attention should be devoted to the study of soils and of water supply. The study of soil geology offers one of the most promising fields for practical work to a geological school at Calcutta; and to a school in the Ganges Delta, the study of the factors controlling water supply is also of particular interest and importance.

(f) Agriculture.

We find ourselves in regard to this matter in reluctant disagreement with Mr. Milligan, who fears lest the unpractical teaching of a university might do more harm than good to the students. It appears to us, however, that some general view of the subject is needed for students who intend to devote their lives to it. Such a course would give a sketch of agricultural economics (including co-operative credit), the problems of labour and of machinery in Bengal, and the general problems of farm-work. It would also give some description of agriculture outside Bengal, as it is quite possible that Calcutta might in future supply agricultural experts to other provinces and to countries outside India.

We do not propose here to lay down detailed syllabuses or prescribe courses; that must be the affair of the proper bodies when constituted. We shall consider the question of these bodies below. But as suitable topics for such a course we would suggest soil, manures, tillage, crops and cropping, foods and feeding stuffs, the climatic factors that affect agriculture, and general land and estate management. We suggest that these lectures might be given partly in Calcutta, partly during the summer vacation at the University Farm discussed in the next paragraph. The important topics of agricultural economics (and especially of co-operative credit) might perhaps be best dealt within Calcutta by a lecturer in the Department of Economics. A practical course on agricultural

book-keeping should be given either at the Government Agricultural Institute or at the University Farm near Calcutta.

We think it useful to add in the volume of appendices to this report a brief sketch of the scheme recently adopted by the University of London for a degree in Estate Management.[1]

5. It was suggested to us by one specialist witness that the practical training in agriculture might be postponed till the close of the purely scientific training. But we feel it essential that the students should be kept in close touch with the land and not lose sight of the practical aspects of the subject; and we regard as an essential factor of the scheme the establishment of a farm close to, or within easy reach of, Calcutta, at which the students would spend three months continuously in each year of the university course, and which they should visit periodically, once a week, or once a fortnight, so as to keep or become familiar with seasonal operations. We understand that there is some prospect of a generous benefactor presenting a farm of 200 acres near Calcutta for such a purpose.

The management of the farm is a matter for future settlement. One suggestion is that the university lecturer on agriculture should act as director of the farm. It has also been suggested to us that it might be managed by the professor of botany in charge of the subject, with assistance from an officer to be lent by the Department of Agriculture who would live on the farm and supervise the daily operations.

The buildings on the farm should include a lecture room and laboratories for chemical and biological work. Such laboratories need only be of a simple character, as they would be supplementary to those in Calcutta.

As market gardening is an important industry around Calcutta some training in horticulture might well be given at the University Farm, and the systematic teaching of horticulture and of estate management would probably develope naturally in the

[1] We note that the Dacca University Committee recommended that training in the elements of land surveying and estate management should be provided in the Dacca University for the sons of zamindars, such training not necessarily forming part of a degree course (Report of Dacca University Committee, page 94).

University Department of Agriculture, if this were successfully started.[1]

6. After attending the three years' course at the University and taking his B.Sc. degree the student would proceed to the Agricultural Institute for which a scheme has been sketched out by Mr. Milligan in his memorandum[2] and which we hope that the Government of Bengal will see its way to establish. Mr. Milligan suggests that the Institute should be placed in Northern Bengal, in a locality where training could be given with more varied crops than is possible near Calcutta or on any one farm in South Bengal. He is of opinion that the students should spend two years at this Institute in order to see two years' complete rotation of crops and seasons. One year would show a complete cycle and might be adequate for exceptional students; but no doubt a two years' course at the Institute would be desirable in most cases. Mr. Milligan thinks it might be possible in the case of especially good students to entrust them during the second year with work on the farm, for which they would be paid.

We quote here Sections 8 and 9 of Mr. Milligan's memorandum, which describe the main features of the Institute:—

"(8) In the first place, the idea of a 'college' should be dropped. The institution should be simply called an agricultural institute. It should consist of a well-equipped, up-to-date farm so organised as to be in a position to give practical instruction in a variety of different branches of agriculture among which the following are the more important:—

I { 1. Tillage, 2. Cropping } by (*a*) Indigenous and (*b*) Modern methods.
I { 3. Plant selection, storing of seed, etc.

II { 4. Land surveying and measuring
II { 5. Construction of bunds and water channels.
II { 6. Construction and repairs of buildings.

[1] We ought to contemplate the possibility that the University might not be able to obtain a farm of its own at an early date. In that case arrangements might be made for the work in connection with the three years' course at Calcutta to be undertaken on a Government farm. The most suitable for that purpose would be the farm of 210 acres at Chinsura, beside the Chinsura station on the East Indian Railway, about 20 miles (45 minutes by train) from Calcutta. The farm has a fertile and representative soil and produces an instructive variety of crops. Part of the laboratory and lecture work in connection with the three months' summer courses might in this case be given in the buildings of the Hooghly College.

[2] Printed in the volume of appendices to this report.

III { 7. Steam, oil, water and wind power engines.
8. Utilisation of power.
9. Water lifts and pumps.

IV Carpentry and fitting.

V { Care and feeding of animals.
Treatment of wounds.
Diagnosis of contagious and infectious diseases.

(9) The main principle to be observed would be that no student would be allowed to leave any operation until he had mastered it. Classes would thus be largely dispensed with. It is obvious that at an institute of the kind it would be possible to arrange courses of instruction for almost any class of student and for almost any employment connected with agriculture."

We think that the scheme, which covers, as will be seen, the subjects usually classified under the general heads of agricultural engineering (civil and mechanical), surveying, veterinary science and animal husbandry and dairying, would be efficient, provided that too much time were not devoted to lectures, owing to the desire to cover these wide subjects completely.[1] The Institute would not be limited to university students; and it would award its own diplomas, given on the result of its own records of work and its own examinations.

We think it would be inadvisable to suggest that the University should take any share in the management of such an institute beyond, possibly, the election of one or more members on its committee of management, so as to facilitate co-operation with the University. And as the university authorities would accept the diploma of the institute, superadded to the specialised B.Sc. degree described above, as forming the qualifications for the Calcutta degree of bachelor of agriculture, they should be kept informed of the work carried on by the institute by means of its annual reports, so that they might propose some other arrangement if in course of time the scheme should prove unsatisfactory or need amendment. As an approximate precedent for our proposals, we may quote the example of the University of Madras which does not award the degree of Bachelor of Engineering to a student who has passed the examination for that degree until he has spent a further year in an engineering works

[1] As suggested above a course in agricultural book-keeping would be required at some point in the whole course either at Calcutta or at the Agricultural Institute.

[1] Appendix 1 to this Chapter.

(not under university control) and has received a satisfactory certificate from the managers of the works in regard to his work. The proposed Agricultural Institute would correspond to the engineering works in this case.

We are disposed to think that the University should refrain from conferring a diploma in agriculture other than the degree and that the conferment of any such diploma in Bengal should be left to the Department of Agriculture. This should be no hardship, as the Sabour College would continue to offer its certificate to a certain number of Bengal students.

7. Mr. Milligan is averse to the creation in the University of a Faculty of Agriculture. The alternative would be to leave the training in agriculture described above under the Faculty of Science. We should not regard this organisation as satisfactory.

We think it advisable that the Faculty of Agriculture should be constituted at an early date, on lines somewhat similar to those of the Faculty of Engineering, and that at the beginning, at any rate, the outside technical element should be very strongly represented. We suggest therefore some such membership as the following :—

The Director of the Government Agricultural Institute (when established).

Three representatives of the Department of Agriculture, appointed by the Government of Bengal.

Three representatives of agricultural industries and interests appointed by the Chancellor.

The university reader or lecturer in agriculture.

Six teachers, appointed in the first instance by the Faculty of Science, comprising the heads of the departments of economic botany and of economic zoology, and one teacher of each of the following subjects, giving teaching at any institution or college forming part of the agricultural course ; chemistry, botany, zoology, geology.

The head of the University Agricultural Farm, if not included under any of the foregoing categories.

8. We have borne in mind the scheme just recommended to Government by the University of Calcutta, from which our own

differs in some material points, though not in its main object and aim.

(1) The University has proposed a five years' course starting at the date of matriculation. As we have explained in Chapter XXXI, we regard the present intermediate stage as the suitable stage for entrance to university studies; and we propose an agricultural course of four or five years beginning at that stage. We may point out that if a candidate passed the intermediate examination at 18 he could obtain his B.Sc. degree at 21 and his degree in agriculture at 23, an age which can hardly be regarded as too late for a young man to assume an agricultural position of responsibility.

(2) Our scheme provides for a longer period of practical training; and this we think should be provided (at any rate, initially) in two farms, the Calcutta University Farm, and the Government Agricultural Institute, instead of in the four farms suggested by the Senate.

(3) We think it inadvisable to create the diploma of licentiate of agriculture recommended by the University.

The second point referred to above raises two distinct matters of principle, implicit in the details of our scheme, which must now be discussed. We have assumed (*a*) that the number of agricultural students to be provided for at first should be limited, and (*b*) that the university portion of the training should be given, in the first instance, only in or in the neighbourhood of Calcutta. We shall now deal with these points.

9. We are forced to believe by the evidence brought before us that the attraction of a university degree in agriculture may very probably induce students to take it without enquiring too closely whether it is likely to enable them to earn a livelihood. The Calcutta University Committee,[1] referring to Sabour among other institutions as one which has not proved very attractive to students, suggests that that may be because they are

[1] Report of the Calcutta University Committee on the feasibility of the University taking steps to develope the teaching of the higher branches of agricultural, technological and commercial studies in the University, 1917.

unconnected with the University and cannot confer any degrees or other university distinction. The point is one we have discussed earlier.[1] It seems to us imperative that the output of the University Agricultural Department should, in the interests of the students, be strictly limited in the first instance, and allowed to expand later either by an increase in the number of students admitted to the course in Calcutta or by the creation of an agricultural department at one or more of the mufassal institutions, if and when the demand for agricultural graduates developes sufficiently to justify such action.

The callings which we contemplate as being open to students who pursue successfully the course described may be enumerated as follows :—

(1) Employment in the Imperial Agricultural Department. We understand that the Department will probably be able to engage 150 officers during the next 20 years, *i.e.*, at the rate of about 7½ men a year. The normal share of Bengal in such employment would not amount to more than one or two men a year.

(2) Employment in the Bengal Agricultural Department. As stated in Chapter XXV, paragraph 29, this would only absorb one man a year now, but if Mr. Milligan's proposals are accepted it might absorb four, with a few additional appointments as farm overseers. The pay of district officers and of farm overseers is from Rs. 75 to Rs. 200 a month.

(3) Employment as managers under the Court of Wards,[2] say one or two a year.

(4) Employment as managers or estate agents to zamindars.

(5) Employment in some of the major agricultural industries, *e.g.*, tea-gardens, tobacco plantations, and cinchona and other drug plantations, in Northern Bengal, Assam, Burma and other parts of India.

(6) Officials, under Circle Officers, Settlement Officers, District Boards, and in the Co-operative Credit system.

(7) Inspectors of Schools and teachers in rural districts. We think that students who had taken the B.Sc.

[1] Chapter XXV, para. 28.

[2] *Ibid.*, para. 26.

specialised course described above, followed by a course at a training college, might be specially useful as head masters of high schools, and inspectors in rural districts.

In view of the resolutions of the Simla and Poona Conferences[1] we think it unlikely that there will be any creation of agricultural high schools in the near future, or, therefore, any need for the training of teachers for such schools. When, however, intermediate colleges are organised[2] and agricultural courses are included in the curriculum of a certain number of such colleges, or if, as suggested by Sir Ali Imam,[3] travelling agricultural lectureships are established, there will be a demand on the University for specially trained teachers. But in our estimate we have not taken this factor into account so as not to exaggerate the demand.

The foregoing categories do not include those whom the advanced courses at Cawnpore[4] and at Coimbatore and other colleges are specially designed to attract—and have succeeded in attracting—sons of land-owners, and men who will cultivate their own land. We have been informed that many of the zamindars of Bengal have nothing whatever to do with the cultivation of the land from which they receive rent through a whole series of lessees and sub-lessees, and that their interest in improved cultivation may be so remote as to be negligible, so that if they employ trained agriculturists to help in the improvement of agriculture on the lands owned by them, they will employ them as an act of public generosity by which they will not themselves profit financially.[5] Further it has been impressed on us that the number of relatively large holdings is small; and that many land-owners

[1] Printed in the volume of appendices to this report.

[2] Chapter XXXII.

[3] Question 1.

[4] The syllabus of the Cawnpore College warns students that only a small proportion can obtain Government appointments; there are 5 posts a year available for those who have passed the two years' course and enter the Lower Subordinate Service beginning at Rs. 40 a month; while for those who have taken the four years' diploma course there are available 2 posts a year beginning at the rate of Rs. 80 a month.

[5] Landowners are entitled under the Bengal Tenancy Act (section 30) to enhance the rent of tenants if there has been a rise in the average local prices of the staple food crops. But for various reasons this provision does not appear to be a sufficient inducement to zamindars to assist in the introduction of improved agricultural methods.

have a prejudice against agricultural work, a matter which we have discussed at some length.

Finally, it is to be remembered that a supply of capable men will, to a limited extent at first, but gradually, create a demand for their services, as Mr. J. N. Gupta implies in his memorandum.[1]

Taking all these factors into account, we think it would be wise to limit the entries to 20 a year in the first instance, and, as we have suggested, to increase them as and when the demand increases. Special care should be taken for a number of places, fixed from time to time by the Government, to be reserved for Muslim students. Preference should also, we think, be given to students already connected with the land.

10. We have selected Calcutta as the first centre for university agricultural training on educational grounds and on grounds of economy. We regard the study of the agricultural sciences as of primary importance in the first years of the course; and good teaching in those sciences can be most easily and economically provided in Calcutta itself.

But if our hopes are realised, there will be room for more than one centre in Bengal. The question of establishing an agricultural department at Dacca, which has special claims, in view of the removal of the headquarters of the Agricultural Department to that town, its possession of an experimental farm, and its position as the seat of a future university, we shall consider separately.

There should, we think, be a third centre in Northern Bengal later, possibly, as Mr. J. N. Gupta suggests, at Rangpur.

11. The question of primary education lies outside our reference, but we may point out that at the recent Bengal Agriculturalists' Conference (30th December, 1917) a resolution was carried by an overwhelming majority in favour of making "primary education combined with practical agricultural education free and compulsory all over Bengal." Sir Daniel Hamilton, whose knowledge of the practical side of the matter and whose enlightened interest in Indian rural education are well-known, suggests in a letter to one of our members, that—

"The Commission should not lose sight of the growing demand for compulsory education which must come very soon. This implies a proportionate number of higher schools all over Bengal—probably 3,000. The

[1] General Memoranda, page 2.

head masters of these schools should have a practical training in agriculture and if Government were to insist on their having a degree or diploma in agriculture, there would be a big demand for an agricultural college and agricultural education straight away, and the head masterships would provide the necessary openings for the students after they had taken their diploma or degree."

While we sympathise with the view that the head masters of rural schools should have some insight into agriculture—the means of livelihood, direct or indirect, of the majority of their pupils—we are bound to remember that the present salary of the head master of a rural school in Bengal would hardly justify the cost of a university education in agriculture.

Although primary education and the earlier parts of secondary education are without our scope, we may perhaps here express our general agreement with those agricultural authorities who insist that direct agricultural teaching at an early school age is inadvisable; but we think that pupils in the agricultural districts should be prepared for their life-work by teaching which will introduce them to the principles underlying agriculture. We agree with the view that, in order to increase the agricultural bias in school education, readers should be used in elementary and secondary schools containing illustrations and exercises drawn from agriculture and rural life; and we are strongly of opinion that the secondary school should include a course beginning with nature study and passing on to elementary science. This course should at first be optional, but as soon as teachers and suitable text-books are available, a nature-study course should be made compulsory in all rural schools and a science course should be included in all the upper forms of the higher rural schools.[1]

We have also proposed that courses in agriculture should be given in a certain number of intermediate colleges.

12. We have given our views fully in regard to the questions of training in forestry, sericulture, and veterinary science in Part I of the Report, Chapter XXV.

13. *Conclusion.*—It would be difficult to over-estimate the importance of providing Bengal with the right kind of agricultural education. But, as we have seen, the subject is fraught with many and grave difficulties, unsuspected by those who merely take as a premiss that agriculture is the fundamental industry

[1] Chapter XXXI.

of the province on which the whole economic future of Bengal depends, and arrive at the easy conclusion that the universities of Bengal should launch out on large and expensive agricultural schemes.

If we are unconvinced by what has seemed to us an excess of enthusiasm on the one hand, we have resisted, on the other, the prophecies of those experts who assure us that any scheme of university education in agriculture in Bengal is foredoomed to failure. This expert opinion appears to be in part oblivious of the success of the highest kind of agricultural education in other countries such as the United States, in part insufficiently informed as to the present situation and intellectual stir in Bengal, and the new movement of respect for manual occupations. The scheme we have proposed will, we believe, not be unduly costly; it will combine the intellectual training in the fundamental sciences which can best be given by the University with the practical training which can best be given by the Department of Agriculture. We are bound to regard it as an experiment. If the experiment succeeds, it will serve as a basis for future developments adequate to the vast agricultural necessities of Bengal. If it fails—though we are far from thinking that it will fail—the money spent will have been justifiably spent in experimenting in the interests of Bengal's greatest industry.

CHAPTER XLVIII.

Training in Technology (other than engineering, mining, architecture and agriculture) and in Commerce.[1]

I.

1. Experience in the West, especially in Britain, France and America, has shown that applied science and technology are admirable instruments of education. We are therefore of opinion that a modern university, especially one situated in a great industrial and commercial city, should include them in its courses and should recognise their systematic and practical study by degrees and diplomas. The training of men for responsible positions in scientific industry is a service which the universities, along with other institutions, may with advantage render to the community. Moreover, the inclusion of practical scientific studies in the curriculum of the institutions which are recognised as giving the highest forms of training for various careers has a beneficial effect upon the educational outlook of the whole people; it may be a corrective to a too exclusively bookish tradition in the secondary schools. It is desirable therefore on many grounds that the universities should give their sanction and support to technological education; but the latter should not fail to be liberal in its outlook while keeping practical ends in view.

2. In India such sanction and support are of special value, because the university exerts a unique influence upon the educational outlook of the more cultivated classes of the people. What was said in 1866 by Sir Henry Maine, in his address to the Convocation of Calcutta University, remains true to-day. "I doubt whether there is anything founded by the British Government in India which excites so much practical interest in households of the better class as the examinations of the University." Social traditions are still strong against callings which, in their earlier stages at all events, involve work with the hands. The influence of the university

[1] See also Chapter XXVI.

may be powerful in helping to remove this obstacle to progress. Secondly, there are good reasons for thinking that scientific industry will open an increasing number of careers; in these capable and well-trained young men will be able to find employment with better ultimate prospects than those offered in the more congested occupations to which they now throng in numbers disproportionately large. By providing systematic and practical courses of training for scientific and other posts in industry, the University will confer a benefit upon the community and not least upon that large part of the educated classes which is in need of a wider range of well-remunerated occupations.

3. We concur therefore in the finding of the committee which was appointed by the Senate of Calcutta University on October 13th, 1917, that "it is desirable and necessary that the University should take steps to develope the teaching of agriculture, technology and commerce." This view is confirmed by the opinion expressed by our witnesses. As many as 125 correspondents[1] urge the need for technological training at the university, and 97 recommend that the university should also provide advanced courses of instruction in subjects which will be of value to those intending to follow a commercial career. Several influential associations press for the development of technological studies at the university, and among individual witnesses who share this view there are representatives of public opinion in Assam and Burma. The number of witnesses who hold that technological training lies outside the proper functions of a university is small.[2]

4. This change of attitude on the part of the University and the great majority of its influential supporters is of good augury for the future of secondary and intermediate education. In Bengal it is in the high schools and in the intermediate colleges that the foundations of the new educational policy must be laid. If in future every pupil in the secondary schools receives a general introduction to science; if manual training and practical work in science in those schools are encouraged; and if steps are taken to provide opportunities for scientific training at all intermediate colleges and for preliminary practical instruction in agriculture and engineering at some of them, the universities will

[1] Question 6.
[2] Only six witnesses express this opinion.

be supplied with an increasing number of students well prepared to take advantage of the advanced technological courses which alone it is the proper function of a university to provide. This is one of the reasons which have led us to recommend that the difficult task of remodelling the present matriculation examination, of helping the schools to obtain the necessary staff and equipment, and of planning the curricula of the intermediate colleges, should be assigned to a Board of Secondary and Intermediate Education upon which the universities and representatives of industry, commerce and agriculture would have effective representation. The foundations must be laid in the high English schools and intermediate colleges, the work of which will be too costly and many-sided to be compassed by any authority which does not enjoy liberal support from public funds.

II.

5. How far the University of Calcutta may be in a position to develope departments of higher technological training and research in other branches besides engineering, mining and agriculture (the claims of which are discussed in other chapters)[1] will depend upon the financial support given to it for this purpose by private benefactors or by the industries concerned; upon the view which may be taken by the Governments of Bengal and of India, and possibly by the Corporation of Calcutta, as to the distribution of such part of their revenues as may be available for technological training and research; and upon the number of expert technologists who may be available for university teaching.

6. For these reasons it would be premature to draw up a complete list of the departments of applied science and technology which the University should in course of time establish; but Calcutta is evidently a convenient and suitable centre for the advanced training of students to meet the requirements of—

(i) the leather industries;
(ii) the chemical industries (including those concerned with the manufacture of dyes);
(iii) the oil and fat industries;
(iv) some branches of the textile industry.

[1] Chapters XXIV, XXV, XLVI and XLVII.

It is desirable that the University should provide advanced training and facilities for research in industrial chemistry, including colour chemistry and the preparation of dyes, drugs, and photographic chemicals, also in tanning and in fermentation, and in the sciences bearing on the gas and coal-tar industries and on the oil industry. The department of physics at the University College of Science might be developed with special reference to electro-technology, applied thermo-dynamics, optics and the standardisation of instruments. They should be so organised as to supplement and co-operate with the electrical department at Sibpur, where the accommodation may not suffice for many students in excess of those taking the full engineering and mining courses. Further, there should be a department of mechanics and applied mathematics, adapted to the needs of men engaged in various industrial occupations.

7. In considering what departments of applied science and technology (other than in engineering, mining and agriculture) it should endeavour to establish, the University of Calcutta should have regard not only to the financial cost of their foundation and maintenance but also to the desirability of there being a division of labour between the different universities of India with regard to technological training and research.

8. At Dacca the intermediate college should provide practical instruction preparatory to engineering and agriculture, and the research work in the scientific laboratories of the University should be linked up with what is being done in cognate subjects in the University of Calcutta and elsewhere, in the way suggested in paragraph 26 below.

But though the researches of members of the scientific staff of the University of Dacca may have important bearings upon industrial problems, the developments of higher technological training which will be desirable in Calcutta should not, in the first instance at any rate, be attempted at Dacca, where the industrial and commercial conditions offer far fewer opportunities for co-operation between the University and the industries concerned. For the less advanced grades of technical instruction, Dacca will presumably be chosen by the Department of Industries as the chief centre of organisation for Eastern Bengal.

9. In a great city like Calcutta, one of the chief functions of a university is to meet the intellectual needs of the industrial

and commercial world and to establish such contacts between the different groups of investigators and of students as will make the whole academic body an active school of thought, of citizenship and of public service. In fulfilling this function the University need not be unfaithful to the older academic aim of training men for the professions.

10. In its departments of technology the value of the work of the University will be measured by its success in developing among the students what has well been called 'technical sense,'[1] *i.e.*, a trained perception of the best course to be followed in adapting a process which has been found successful in the laboratory to the conditions of workshop production. The student needs a firm basis of accurate knowledge, a habit of mind which is both scientific and practical, resourcefulness in grappling with difficulties, and a quick appreciation of the element of cost in judging whether a new process is sufficiently matured for application upon a commercial scale.

11. In order to provide the conditions which give such a training, the University will need to have at the head of each of its technological departments, and also in the more responsible though subordinate posts on their staffs, men who combine great scientific knowledge with practical experience and with the gift of teaching. These men are not easy to find. It will also require in its technological departments mechanical equipment sufficient to give the students a good idea of processes of manufacture; and the heads of the technological departments must stand in such friendly relations to business firms as will enable them to secure for the students opportunities of experience in works. These relations with business firms can only be built up slowly as confidence is secured. We are therefore of opinion that it will be well for the university to develope its new departments of applied science and technology with deliberation and caution, and to exercise such care in the admission of students to these departments, and in the appraisement of their practical aptitude, as will guard against an overproduction of young graduates in these subjects and will prevent such an outstripping of the demand for them (or failure to send out men who will satisfy

[1] By Dr. Gilbert J. Fowler of Bangalore, in his presidential address to the chemical section of the India Science Congress, Lahore, 1918. (Journal of the Indian Institute of Science, Bangalore, February 1918.)

their employers) as would lead to disappointment, and to reaction against university methods of technological training.

12. Subject to this care being exercised, we look forward with confidence to the future of the departments of applied science and technology in the University of Calcutta. The reform of the high English schools and the establishment of intermediate colleges will lead to a steady increase in the number of well-trained students anxious to prepare themselves for scientific posts in industry. The reconstitution of the University will associate with its work and interests a number of the most influential leaders of industry and commerce in Bengal. And the industrial outlook in India is favourable to the prospects of technological training in all its grades.

13. The Government of India have forwarded to us along with other documents a copy of the report of the committee appointed by the Senate of Calcutta University on February 9, 1918, to frame regulations for examinations and degrees in certain technological subjects, including technological chemistry, dyeing and tanning,[1] and state that they do not feel in a position to pass orders upon the draft regulations without having before them our views on the inclusion of such subjects in university courses. For the reasons adduced in the opening paragraphs of this chapter, we heartily approve of recognition and encouragement being given to these studies by the University, provided that suitable courses of instruction are available to the students who wish to qualify themselves therein. It is essential that, before any new degree or certificate is authorised in technological subjects, the organisation of effective teaching, including practical work, should be assured. The Government of India invite us to comment specifically upon the draft regulations. In our judgment it would be premature to sanction them until the University has either itself made provision for the teaching and laboratory equipment required or is satisfied that students wishing to take these courses will be able to find in other institutions the scientific and practical training indispensable for the purpose. The recognition of these new technological courses by the University of Calcutta is a development of critical importance. We regard it as highly satisfactory that the Senate has approved in principle

[1] Chapter XXVI, para. 44.

such an enlargement of the scope of the university's work. But precipitancy in awarding degrees or licences in technological subjects to students whose scientific and practical training might be inadequate for the purpose in view would have the unhappy result of disappointing expectations and of depreciating seriously the future value of university qualifications in these branches of study. It is highly important that the first products of the proposed new departments should prove themselves qualified for responsible work. We suggest therefore that the Governmnent of India should express its approval of the addition of these technological subjects to the courses recognised by the University of Calcutta but should withhold its assent to the draft regulations for degrees and licences until the provision for the necessary teaching and laboratory accommodation is guaranteed. This would assure the University that the aims of its new policy in regard to technological education have the approval of the Government of India, and would justify it in approaching private donors for help towards the achievement of its purpose. A further reason which weighs with us in support of this recommendation is our anxiety that the work done in the intermediate classes (upon the excellence of which the success of the scheme proposed in the draft regulations would depend) should be very materially improved before the University ventures upon the practical execution of its plan for the encouragement of these branches of technological training. A scrutiny of the draft regulations shows that the intermediate stage in the proposed new courses is of vital importance. We doubt whether under present conditions the proposed intermediate course in dyeing or in tanning could be effectively given in any college affiliated to the University or in any other institution in Bengal which could be recognised as giving satisfactory instruction to non-collegiate students in the manner contemplated in the draft regulations. Nor are we satisfied with the provision which the draft regulations make for practical training in dyeing and tanning. Workshop experience is rightly required, but practical training in an educational institution should be more explicitly demanded, as there could be no guarantee that a student would receive an all-round training under the ordinary conditions of employment in a works. It is far from our wish that the proposed new developments of technological training in connexion with the University should be

delayed after the necessary provision of teaching and laboratory accommodation for all stages in the courses has been secured. But a reorganisation of the intermediate courses, and the provision of facilities for practical training are indispensable to the success of the new proposals. Moreover, the length of the course of post-intermediate study for the ordinary degree in technological chemistry, dyeing and tanning, and the advisability of granting a licence in technology on a course of study extending over only one academical year are questions which require further consideration.

14. The grouping of as many as possible of the university departments of pure and applied science in the same neighbourhood and round a common centre will be so convenient and advantageous to teachers and students alike that the authorities of the University should make such a concentration one of the guiding principles of their policy. Some exceptions to this are inevitable. The headquarters of the engineering and mining departments must remain at Sibpur. The schools of medicine are inseparable from the hospitals to which they are attached. The university departments of botany and zoology are established at Palit House in Ballygunj. Moreover an important—we hope an increasingly important—part of the scientific teaching in the University will be given in college laboratories, notably at Presidency College and St. Xavier's. The University College of Science in Upper Circular Road is clearly indicated as the chief centre of teaching and research in applied chemistry and physics, courses of instruction and laboratories for investigation in the related branches of pure science having a place in the same institution alongside of these departments of applied science. We recommend therefore that, so far as may be found practicable, the laboratories and workshops of the new technological departments of colour chemistry (with dyeing) and of the leather industries should be placed in its immediate neighbourhood. This arrangement will enable the students of these departments conveniently to attend courses at the college and will facilitate collaboration in research. The University College of Science has recently been placed under a governing body,[1] and we recommend that this form of administration should be continued under the new constitution

[1] Chapter XV, Section VI.

which is proposed for the University in this report, in order that the Executive Council may be relieved from the consideration of many administrative details which would otherwise devolve upon it. The new technological departments of colour chemistry, the leather industries, etc., should be attached administratively to the College of Science and their general management entrusted to its governing body. A further possibility of co-operation should be mentioned here. In Chapter XXVI above, paragraphs 40-43, we have referred to the scheme for establishing a technological institute in Calcutta. When, as we hope may soon be the case, this plan is carried into effect, it is highly desirable that the buildings of the new institution should be near the University College of Science and its attached technological departments. In many branches of technological instruction considerable economies in staffing and equipment will be possible if the governing body of the technological institute and the Executive Council of the University act in co-operation. The workshops of the technological institute might be used by university students, especially in the day time when the more elementary classes of the institute would not be held.

15. In Chapter XXXVII, paragraphs 62-64, we have provided for the constitution of faculties in the University of Calcutta and have proposed that the number of such faculties and the general features of their composition and powers should be determined by Statute. We have also suggested that power should be given by Statute to two Faculties to constitute a joint committee, subject to the approval of the Academic Council to which it would report direct. It should be left to the authorities of the reconstituted University to determine whether the branches of technological study discussed in this chapter should be represented by an independent faculty or be grouped under the Faculty of Science. The teachers in the new technological departments would gain from being thrown into close association in academic business with their colleagues working in other scientific departments of the University; and this consideration favours a plan which would include their representatives, at first at any rate, in the Faculty of Science. On the other hand there is some risk that the special and necessarily costly claims of the new technological departments might be swamped unless they were urged by a distinct faculty; and it may be urged that their studies and point

of view should have an independent voice in the faculty organisation, not least at the inception of their work when their representation upon the Faculty of Science would be relatively small. The choice between these alternative arrangements should in our judgment be left to the University. It is sufficient for us to emphasise the importance of including in a Faculty of Technology, if one is constituted, a considerable number of representatives of pure science in order that the different sides of scientific work in the University may be kept in contact with one another and that the part which pure science must bear in fresh developments of applied science may not be overlooked.

III.

16. To secure effective co-operation between the technological departments and the industries which they are designed to serve, it will be found desirable to set up an advisory committee in connexion with each technological department. Each advisory committee should include leading representatives of the industry concerned, together with representatives of the scientific staff of the University, as well as the Vice-Chancellor (or his representative) and others in administrative positions in the University. Occasional meetings of the advisory committee connected with each technological department will enable the members to keep themselves well acquainted with the work which is being done in the department, and in the other parts of the University which are concerned in its scientific investigations. The members of the advisory committee would have an opportunity of visiting the laboratories of the department, of meeting the staff and of making acquaintance with young students of promise. The experience of the industrial members of the committee would enable them to suggest new developments in the department's work and to discuss them with their scientific colleagues on the committee. The Vice-Chancellor and other representatives of the Executive Council of the University would learn what further extensions of the work of the department were likely to be required. In this way, the personal tie between the University and the different branches of industry would be strengthened, co-operation between the various scientific departments in dealing with new industrial problems would be facilitated; and the interests of each technological department would receive prompt consideration

from those primarily concerned in the general direction of university policy. Advisory committees of this kind would give valuable counsel and many practical suggestions; but we do not propose that they should have authority to determine courses of study or be given powers which would lessen the responsibility of the Academic or Executive Councils of the University.

17. In each technological department students should have an opportunity of becoming candidates for a degree in honours, or for a pass degree. In the departments of the leather and textile industries it is desirable that all students, except perhaps those who are preparing themselves for the special work of leather chemist, should have some preliminary acquaintance with actual processes of manufacture before beginning their course at the University. In order to meet the needs of students whose general attainments and scientific promise justify their admission to the Department but whose employment in industry has prevented them from fulfilling all the educational conditions which the University may prescribe for entrance upon a degree course, it is desirable that the University should establish courses leading up to a diploma instead of a degree, the requirements of the diploma course being, so far as they extend, as exacting in regard to scientific attainment and to practical aptitude as those imposed upon students taking the course for a pass degree.

18. The aim of every course of training given in a technological department should be clearly defined, and the certificate (whether a degree, or a diploma) should in each case plainly signify the kind of work for which, in the judgment of the University, the holder is qualified. Thus, in a department of colour chemistry and dyeing the certificate should show in clear words whether the student has been trained as a colour chemist or as a practical dyer or master of dye works; in the department of leather industries, the certificate should show whether the student has been trained for the duties of general management or for expert service in a works laboratory. In each case some practical experience of industrial conditions and of the processes of manufacture is indispensable. But in the qualification of the expert laboratory worker a higher standard of scientific attainment should be insisted upon, and in the qualification of the candidate for employment as works-manager a longer and wider experience of industrial conditions should be

required. A clear differentiation of aims seems to us to be important as calculated to give precision to the purpose of the various technological departments and to their examiners in conducting the necessary tests. We do not however forget that a student with practical ability, resourcefulness and power of adapting himself to new conditions may show himself after probation in a works able to undertake duties of a wider range than those for which his certificate may show that he has been trained.

19. The most difficult condition which the University will find it necessary to fulfil in providing effective forms of technological training is that of securing opportunities of practical experience for its students. Much may be done by providing industrial equipment in the workshops attached to such departments as those of the leather or textile industries. But practical training in these workshops will not suffice for all the needs of the students. The latter must have experience of work done under ordinary industrial and commercial conditions, where the operations are upon a much larger scale and are carried on with a view to profit. Before he receives his degree or diploma at the University, a student should spend some time in a works and thus become inured to ordinary industrial conditions and see processes carried out upon a commercial scale. We do not think it practicable to propose that industrial firms should be invited to make themselves responsible for the systematic training of university students. They cannot as a general rule be expected to undertake this duty or to subject themselves to possible criticism and interference by representatives of the University. The latter should be responsible for the students' training in its own laboratories and workshops. What the student can get in works, and in works alone, is practical experience in dealing with work-people and of work done under commercial conditions. This necessary experience he can get under the ordinary terms of employment. At the same time in individual cases students may receive special facilities for a more all-round training in works when there is close co-operation between a private firm and the University. Experience in the United States shows that such co-operation is practicable, given a readiness on the part of great firms thus to encourage technological training and a corresponding readiness on the part of the University to regard practical experience in works as a necessary element in its technological courses.

20. The plant required in each technological department will entail considerable expense to the University, not only at the time of first equipping the department but also in keeping the plant up to date. We hope that the firms engaged in the industry will make liberal gifts for equipment. In the choice of appliances and machines the head of the department would be the chief adviser to the university authorities, but the latter would also receive valuable assistance from the members of the advisory committee attached to the department. As the makers of machinery find it advantageous to have their productions installed in a place where possible purchasers may see them at work, the provision of plant and its replacement from time to time may involve somewhat less serious expenditure on the part of the University than might be expected.

21. Many Indian students have gone to the West, either at their own expense or with the aid of Government scholarships or other benefactions, in order to obtain training in technology.[1] The establishment, in close association with the industries concerned, of technological departments in the University of Calcutta will meet many, though not all, of the needs now met in these ways. Those who have gone abroad for technological training have experienced a double difficulty—that of finding, while abroad, opportunities of practical training in works, and, on their return, suitable openings in the industry for which they have been trained. The first of these difficulties was less serious during the war, partly because the number of students was smaller, partly because British firms had more vacancies for them on their staff. But the second difficulty shows how necessary it is that the provision of advanced technological training in Indian universities should not be pushed forward without regard to the number of industrial openings available for the students who will be trained. As in all other branches of technical education, advanced technological training and industrial development must progress together. For this reason it is desirable that the University should be guided by the experience of its advisory committees, whose members will have

[1] See Chapter XXVI, paras. 17 and 18 and the report (1913) of Sir Theodore Morison's Committee of Enquiry into the system of State scholarships established by the Government of India in 1904.

expert knowledge of the opportunities which lie before the students when their course of training is finished.

22. We have ascertained the nature of the present employment of the Indian students who have been trained in three technological departments (leather industries, textile industries and colour chemistry with dyeing) in the University of Leeds. Out of thirteen students who were trained in the department of leather industries, eight are now employed in that industry (six as managers of tanneries, one as a leather expert attached to a tannery and one as proprietor of an export and import business in the leather trade), while of the other five, one is now an agricultural chemist in Government service, one a teacher of economics, one an assistant settlement officer in the public service and two are barristers. Of the three students who were trained in the department of colour chemistry and dyeing, one is dyeing master in a factory, one is a teacher of chemistry in a college and one holds a responsible position in a commercial department of the Government of India. Of the two students who were trained in the textile department, one is secretary of a cotton mill and the other a barrister. It will be seen that rather more than half of the total number are now engaged in the industries for which they were specifically trained, and that three others hold positions for which their scientific training is a necessary qualification. We understand that all of the eighteen students have found their scientific and technological education of great value and assistance to them in their careers and those of them whose training in England was paid for out of private funds regard the expenditure as having been remunerative. But the figures which we have quoted indicate the fact that, hitherto at any rate, there has not been a sufficiently strong demand in the industries named above to absorb the services of all the available Indians who have received an advanced technological training. It is not unlikely however that the demand for trained men of this calibre may grow quickly. It has already been stimulated by the war. The more extensive the development of scientific industries in India, the greater will be the need for encouraging technological studies in the Indian universities and for sending carefully selected students, already possessing some practical experience of industrial conditions, to the West for additional training.

IV.

23. It is desirable in our judgment that, so far as is compatible with the full discharge of their duties to the University, the heads of technological departments should be allowed to take fees in private consultant practice. The disadvantage of sanctioning this additional claim upon the energies of members of the University staff is outweighed by the importance of giving to the professors of technological subjects full opportunity of keeping abreast with current industrial problems and methods. Of such opportunity they would be in great measure deprived, if they were precluded from being taken privately into consultation by business firms upon technical and scientific questions. It is necessary to attract to, and retain in, the service of the University eminent experts in technology as heads of departments of applied science. Such men, in taking service in a university, would as a rule have to forego the prospect of a large proportion of the income which they might reasonably hope to earn in private practice. The University could not well afford to pay in the form of salary a sum which would fully compensate them for this financial sacrifice. But in view of the many interests of university life, the pleasure of training young men of ability, and the consideration which is attached to a distinguished university chair, some men are willing to accept an academic post even though it entails financial loss. The number of such men is increased, to the advantage of the University and of technological education, if there is no rigid rule forbidding any kind of private practice. We think therefore that the balance of advantage lies on the side of allowing professors of technological subjects to undertake, subject to the efficient discharge of their academic duties, private work for which they receive payment and by doing which they enlarge their knowledge of the applications of science to industry and thus enhance their value as heads of departments of the University. The Executive Council of the University should lay down, in the case of each appointment to a technological chair, clear conditions as to the professor's obligations to the University, and especially as to what is required of him in regular attendance in his laboratory and at other academic duties. It should be the duty of the Vice-Chancellor to interfere if he has reason to think that a professor is allowing the claims of private practice to impair his punctuality, regularity and general efficiency in the discharge

of the duties which he owes to the University and to the students in his department. As a check upon any misuse of the freedom which we propose should be allowed to professors in deciding what amount of private practice is compatible with their obligation to the University, we think that it is more prudent to rely upon care in the recruitment of the staff and upon the influence of a high standard of honour in the University than upon formal rules. The latter would in any case be difficult of adjustment to the complicated and unexpected questions arising in connexion with private practice.

24. Under war conditions the industries with which most of the technological departments of a university are associated stand in a special relation to the State. The freedom of a professor in charge of a technological department must in such circumstances be subject to special restrictions, particularly in regard to the taking out of patents and to the publication of the results of his researches. Exceptional conditions of this kind may continue, for a time at any rate, in the economic circumstances which are likely to follow the war. This aspect of the question it is not necessary for us to discuss, as the regulations made by the Government with a view to public exigencies of this nature would be operative in all universities alike and would be framed with regard to the exceptional needs of a time of emergency.

25. We regard the promotion of advanced technological studies in the University as one aspect of a much larger problem, all the parts of which are inseparably connected—namely the adjustment of technical training in all its grades to industrial policy and progress. A careful assignment of functions to the lower technical schools and to the University respectively is necessary in order to secure the greatest efficiency and to avoid waste of energy and of funds. Without a considerable development of technical education in all its grades, the technological departments of the University cannot flourish. They are rightly considered as the coping stones of a larger structure. The Governments of India and of Bengal will therefore need to be kept informed as to the work of the University departments of technology—a requirement for which our recommendations as to the visitation and government of the University make provision—and will, we hope, give liberal grants-in-aid to higher technological work as part of a general policy for the encouragement of technical education.

26. But in the encouragement of advanced technological training and research questions arise which affect the welfare of India as a whole and not the interests of one province alone. It is desirable that the scientific work of the technological departments in the various universities should not be wholly disconnected. And in deciding where the chief centre or centres of research and training for any great industry should be established, the convenience and general welfare of the whole of India should be borne in mind. Independent action on the part of individual universities should be welcomed, especially when private liberality enables an institution to develope this side of its work in the interests of the district or province which it immediately serves. The provincial Government should be free to develope technical training for the assistance of any industry which it regards as being of sufficient local importance and promise. But insufficiently considered efforts in establishing new departments of higher technological training and research would be wasteful of energy and funds. There should be a wise division of labour among the universities, and a concentration of enterprise at the places which are best fitted for the purpose. We hope that the Government of India will administer funds out of which it can give special grants-in-aid to advanced technological training and research. It will thus be in a position to exert considerable influence in securing concerted action among the universities. The latter, though we think they should be free to take such action as they wish in view of their knowledge of local circumstances and of the support likely to be forthcoming from private or public sources in their district, would naturally pay attention to the suggestions and advice of a department representing the whole of India and able to make grants-in-aid to new developments of which it approved.[1] The Government of India would be able to assist the universities in securing the services of professors or other teachers specially qualified for the work of technological training. Much might also be done by the Government of India in encouraging co-operation among scientific workers in these subjects and in enabling isolated investigators to work in association with colleagues in other institutions.

[1] The assistance might in some cases be given by lending teachers from its scientific service as is proposed by the Indian Industrial Commission, 1918. (Report, Chapter IX, para. 125.)

27. The recommendations of the Indian Industrial Commission[1] lay stress upon the points to which we have referred in paragraphs 25 and 26 and encourage the hope that scientific and technological training in India will receive greatly increased support from the Government.

V.

28. We now turn to another branch of training—that for commercial life. Here also excellent results will follow from improvements in the courses of study at the high schools and in the methods of teaching which they employ. A large number of boys will be forthcoming as recruits for commercial employment, after having received a good general education up to 16 or 17 years of age. The high school certificate will become a valuable credential to those wishing to enter at that age upon a commercial career.[2] But even more useful as a preparation for business will be the training given at the intermediate colleges, the establishment of which is recommended in this report.[3] We recommend that these colleges should provide a course preparatory to business life. This course, practical but not narrowly specialised, will give an excellent training to young men who intend to enter business at 18 or 19 years of age. Thirdly, there should be classes on commercial subjects at technical institutes aided by the Department of Public Instruction and the Department of Industries. Many of these classes should be held in the early morning, or in the evening after office hours. Lastly, in the highest grade of all, there is need for advanced teaching in banking, actuarial methods, insurance and other subjects bearing upon the commerical interests of the country; in this work, the University should take an active and increasingly important part.

29. Higher commercial education, given in universities or institutions of university rank, has firmly established itself in the United States and in several European countries. The practical value of this form of training for commercial life depends upon the interest taken in it by active men of business and upon the importance which they attach to the theoretical studies which a young man has made before entering the service of a commercial firm.

[1] Report, pages 109-110, paras. 160 and 161.

[2] Chapter XXXI, paras. 52-70.

[3] Chapter XXXII, especially paras. 42-47.

The usefulness of a specialised preparation for commercial life, as compared with that of a good general education, is not generally admitted by British employers, at least so far as posts of higher responsibility are concerned. They attach far higher importance to character, as formed and tested by training in schools and colleges where a young man is thrown into the social and intellectual life of great numbers of his contemporaries destined for many careers. They believe that business ability is developed by practical experience and that commercial life itself is the best college of commerce. The importance of the systematic study of economic and commercial questions is acknowledged by them but they think that as a rule this study is most profitably made by a man who has already gained some practical knowledge of business conditions and that early specialisation in the theoretical study of these subjects is in the great majority of cases not the best preparation which he may receive for commercial life. There are signs however that the commercial leaders in Great Britain are disposed to think that the ordinary course of general education might be better adapted than at present to the needs of those who intend to follow a business career. They give liberal support to the departments of economics in the universities, especially to such an institution as the London School of Economics. And they encourage large numbers of the men in their service to attend university and other classes in subjects connected with their business.

30. We have been asked by the Government of India to consider the draft regulations for examinations and degrees in commerce framed by the committee appointed by the Senate of the University of Calcutta on February 9, 1918. That committee, whose report was adopted by the Senate on March 23 following, propose the institution of an intermediate examination in commerce, of a licence in commerce and of a degree of bachelor in commerce. An essential condition for admission to the examination proposed for each of these grades is that the candidate shall for a prescribed period have received 'practical training in a mercantile office approved by the Syndicate,' and shall 'produce his note-books of such practical work.' But, though practical experience in a commercial house may rightly be required as part of the qualification for a degree or certificate in commerce, employment by a firm cannot be relied on to give the systematic training which the draft

regulations presuppose. Few firms have the time or the staff to give an all-round training to university students, or would be willing to undertake educational responsibilities which would imply that their methods of training would be submitted to criticism from university examiners. Another weak point in the draft regulations is the ambitious nature of the course proposed for the intermediate examination in commerce. It includes seven compulsory subjects, *viz.*: (1) English (simple prose texts and essay writing, précis writing, commercial correspondence and conversation); (2) Hindustani conversation and one of the following languages—French, German, Japanese, Chinese; (3) shorthand and typewriting; (4) commercial arithmetic, and principles and practice of book-keeping; (5) economic geography; (6) economics, general and Indian; and (7) one of the following subjects—mathematics, physics, chemistry, botany, geology. We regard this intermediate course as too ambitious. Comparatively few students are at present sufficiently well-trained in the high schools to enter upon it with any hope of mastering it. Yet it is the foundation of the whole of the committee's plan. Its weakness would affect all the higher stages of the proposed course. We cannot therefore recommend the Government of India to sanction this part of the draft regulations in their present form. The needs of students who wish to enter upon a commercial career (and there are many in all parts of Bengal) should be met by a less elaborate course, offered among other alternatives in the new intermediate colleges which we propose. For such a course as the draft regulations prescribe, only a highly specialised commercial college would be able to provide the necessary teaching; but the intermediate course laid down by the University in preparation for commercial life should be accessible under satisfactory conditions of teaching to students attending intermediate colleges established in various parts of the Presidency. It should therefore, on practical as well as on educational grounds, be of such a character that a considerable number of intermediate colleges could provide effective teaching in all its subjects.

31. In present circumstances the University of Calcutta is more likely to forward the interests of its students by improving the general education given in the university courses, by strengthening its department of economics and by supporting with its great influence measures for the reform of the high English schools and for the establishment of intermediate colleges (with alternative courses,

including one specially designed as a preparation for commercial life) than by establishing a new degree in commerce. We doubt whether it would be wise to encourage a large number of students to hope that, if they take a degree in commerce at the University, their prospects of getting responsible appointments in commercial firms will be improved. The qualifications which employers will rightly regard as most important are the character and intelligence of the applicant, his having received a good general education, and the capacity which he may show on probation for the work of commercial life. It is through a complete reorganisation of the intermediate classes and through improvements in the courses of study for the honours and pass degrees that the qualifications of young men for responsible positions in commerce will most effectively be improved. But, for a more limited number of students, an extension of the range of study in economics in the honours degree course will be of service. We hope also that the banks in Calcutta will encourage the establishment of courses in economics and in banking at the University, and that the courses may be given at a time of day at which it is possible for those employed in banks to attend. Special courses upon other commercial subjects would also be of value to men engaged in various branches of business.

32. But, in view of the development of higher commercial education which may be expected in future when the training given in high schools and intermediate courses has been improved, we recommend that the University should have power to institute, when it thinks fit, a Faculty of Economics and Commerce and to confer degrees and diplomas in commercial subjects. We recommend further that it should form an advisory committee on higher commercial education in association with the work of the existing department of economics. If this advisory committee should report that an alternative course for the bachelor's degree, giving specific preparation for commercial life, is needed in Bengal and that the mercantile community of Calcutta would avail itself on a large scale of the services of young men so trained, it will be within the power of the University, under the new constitution which we propose, to extend the work of the department of economics and to provide courses of instruction for undergraduates who intend to enter commercial life.

CHAPTER XLIX.

The Special Educational Needs of Musalmans.

1. We recognise the significance, as a symptom of social change, of the strong disposition, which is now moving the Musalmans of Bengal, and especially those who live in the eastern part of the Presidency, to avail themselves more fully than heretofore of the opportunities afforded by modern education. The eagerness of this section of the community to avail itself of educational opportunities is one of the facts which impress themselves most vividly upon the mind of the traveller in contemporary Bengal. For the first time in their history the Muslim cultivators of the eastern districts of the Bengal Presidency have been kindled by ambitions which urge them to give higher education to some of their sons. One of the results of this awakening is that the number of Musalmans among the students of the Calcutta University is gradually increasing and that they now represent 9·5 per cent. of the whole. If the present advance continues the proportion of Muslim students will be far greater in a few years' time, when the force of this new social tendency has been more fully disclosed. We appreciate the truth of the statement which we have quoted[1] from the Fifth Quinquennial Review of Education in Bengal that, until the Musalmans, who represent more than half the population, are educated sufficiently to be able to take an interest in the affairs of public life, it is difficult to conceive of Bengal as a part of a self-governing dominion within the British Empire; and we accept the corollary, namely, that the only possible way in which these people can be made to realise their privileges and responsibilities, as citizens of the British Empire, is by giving them effective access to every grade of modern education. This is far from involving any supersession of those centres of genuine Islamic learning which are indispensable to Islamic culture and thus to the culture of India.

[1] Fifth Quinquennial Review of the Progress of Education in Bengal, 1912-13—1916-17, by W. W. Hornell, Calcutta, 1918, paras. 593-595; see also Chapter VI of this report, para. 1.

2. The problem involved in the education of Musalmans has been, and still is, a cause of serious perplexity to the Government of India; there are obvious dangers inherent in a state whose population is divided between religions so fundamentally different, as are Hinduism and Islam. But in this new movement of the Muslim community towards higher education there lies the presage of an intellectual unity which would lessen, if it might not obliterate, the breaches caused by ancient divisions and by deep differences in cultural tradition. A greater equality in point of culture might strengthen the forces which make for harmony and co-operation between the two main sections of the Bengal population; the whole community would be the stronger by the abatement of those misunderstandings and antagonisms which have a long history behind them and still affect the inner life of the country; social reform would be rendered less difficult were some of the estrangement modified by the influence of friendships formed at school and college; and a gradual lessening of the power of old divisions would make the people of Bengal more homogeneous for the manifold and arduous tasks which await it.

3. We have sought to safeguard the Muslim position all along the line. In the constitution which we have proposed for the reorganised University of Calcutta we have provided for the inclusion in the Court of representatives of registered Muslim graduates, as also of representatives of the Muslim community, and we have also suggested that the Chancellor should have power to nominate a certain number of members for a period of five years, of whom 'some might be' representatives of particular communities not adequately represented.[1] In designing the Executive Council of the reorganised Calcutta University we have provided that out of 17 members three at least must always be Musalmans,[2] while our proposed Academic Council is to include "four representatives with educational experience, two at least of whom should be teachers, to be appointed by the Chancellor after report from the Muslim Advisory Board."[3] The Board of Mufassal Colleges is always to contain at least four Musalmans[4]; the Board of Women's Education

[1] Chapter XXXVII, para. 31;
[2] „ para. 42;
[3] „ para. 51;
[4] „ para. 80.

is always to have three Muslim representatives nominated by the Muslim Advisory Board[1]; the Board of Students' Welfare[2] is always to have three Muslim representatives; and on every committee[3] constituted for the appointment of university teachers there should be at least one Musalman. We have insisted that the Executive Commission should contain at least one leading representative of the Muslim community.[4] We have also urged the establishment of a Muslim Advisory Board "to advise the University on matters affecting the interests and convictions of Muslim students."[5] We have advocated the establishment of an Islamia College in Calcutta and the creation of chairs of the principal Islamic studies in the Faculty of Arts of the reorganised University of Calcutta. We have also suggested that proficiency in Islamic studies might be recognised by special degrees or diplomas. These two matters are dealt with at length in Chapters XXXIV and XLII respectively.

4. Turning to the proposed University of Dacca, we have placed in the forefront of our proposals the establishment of a strong department of Islamic studies and we have made suggestions which will, we hope, lead "to the creation of a school of learned men capable of producing important and original studies on Arabic philosophy and science" in addition to the much larger number of Muslim graduates "who will become teachers in schools, inspectors, and members of Government administrations."[6] While not excluding Musalmans from the other halls of residence of the University we have insisted on the immediate establishment of a Muslim Hall which "will offer to the Muslim students a full corporate life and will enable the sons of Muslim parents to receive education under those religious influences to which they attach so much importance."[7] We propose, as in Calcutta, that a Muslim Advisory Board should form an integral part of the Dacca University.[8] As regards the other constituent bodies of the University we have

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[1] Chapter XXXVII, para. 84.
[2] Chapter XXXIX, para. 38.
[3] Chapter XXXIV, para. 118.
[4] Chapter XXXVII, para. 94;
[5] ,, para. 86.
[6] Chapter XXXIII, para. 102;
[7] ,, paras. 145-147;
[8] ,, para. 195.

suggested that the Court should always contain, among others, (*a*) 30 graduates of the University, of whom 15 should be Muslim graduates elected by the Muslim graduates, and (*b*) 40 members appointed by the Chancellor, of whom not less than 20 should be Musalmans,[1] and that the Executive Council should always include (*i*) four persons appointed by the Chancellor, of whom two shall be Musalmans, one being a teacher of the University, and (*ii*) four persons elected by the Court, two of these being elected by the Muslim members of the Court who have registered themselves as Musalmans from among their own number.[2] In the constitution which we have proposed for the Academic Council we have advocated the inclusion of a number of persons, not exceeding one-tenth of the persons otherwise included in the Council, to be co-opted by the Council from persons belonging to the teaching profession and being members of the staff either of the University of Dacca, or of an intermediate college in the Dacca district, or of the Dacca Madrassah. We have also suggested that if the other categories proposed do not include a sufficient number of Musalmans to make up a fourth of the Council, the Council shall be required to fill up the vacancies in the category which we have just indicated so as to bring the number of Muslim members as nearly as possible up to the fraction prescribed.[3]

5. We have suggested that the proposed Board of Secondary and Intermediate Education should include at least three representatives of Muslim opinion and interests.[4] The Board should also form a special committee, upon which the Islamic Department of Dacca University should be strongly represented, to conduct the examination held at the end of the reformed madrassah course and corresponding to the present matriculation, and also the examination held two years later and corresponding to the intermediate examination in Islamic studies.[5] The linguistic difficulties under which Musalmans in Bengal labour have not escaped our notice, and we trust that the recommendations which we have made in this respect, while securing to the Muslim student a better edu-

[1] Chapter XXXIII, para. 184;
[2] „ para. 188;
[3] „ para. 190.
[4] Chapter XXXI, para. 25;
[5] „ para. 27.

cation, will relieve him of an almost impossible burden.[1] We have already referred to the wish of the Musalmans in the matter of candidates' names being written on the answer books shown up at university examinations.[2] We have dealt with this question in Chapter XVII. On general grounds we advocate the adoption, as far as practicable, of the principle of anonymity in large examinations.

6. If our recommendations in the matter of the representation of Musalmans on the various university authorities fall short of what certain leading members of that community have claimed, we can only assure all those who have the interests of the Bengali Musalmans at heart, that our desire is to secure the influence on university affairs of the ablest and most influential representatives of the cultural tradition of Islam, and thus to provide a guarantee, in which the community may confide, that Muslim convictions and needs will find full expression upon all proper occasions, and especially at those points in university business at which the consideration of Muslim convictions and needs is pertinent and appropriate. We are proposing a type of university which differs fundamentally from the type to which modern India has grown accustomed. In the new universities the teachers will enjoy far more freedom and be called upon to face far greater responsibilities. Our belief is that in the work of such a university the influence of the Muslim representatives will depend mainly on their quality and on their ability to discharge their responsible duties with regularity of attendance and with adequate knowledge of the conditions of university life. We hope, therefore, that the Muslim community will furnish an increasing number of teachers of first-rate capacity for participation in university work.

[1] Chapters XXXI and XXXII.

[2] Chapter VI, para. 66 and Chapter XVII, para. 141.

CHAPTER L.

Relations of Government with the Universities.

I.

1. In an earlier Chapter[1] we have analysed with some fullness the existing relations between the Government, both Imperial and Provincial, and the university system of Bengal; and we have been forced to the conclusion that this relation is in many respects unsatisfactory. But we saw also that the nature of the influence or control exercised by Government over university work must depend upon the character of the university, and the form of its organisation.[2] Now that we have described the changes which we recommend in the university system, it is necessary to return to the theme of its relations with Government.

2. Our explanation of the scheme of reconstruction which we propose, and which is set out in the last twenty chapters, will have made plain in some degree the kind of changes which this scheme must involve in these relations; and to a large extent the present chapter must consist of a summary and recapitulation, from a special point of view, of recommendations already put forward.

3. In the first place we have recommended that the present special control exercised over the University of Calcutta by the Government of India should come to an end, that the Governor-General should cease to be Chancellor, and that his Government should no longer be responsible for university regulations, and for the affiliation and disaffiliation of colleges. We propose (i) that two special Acts, one reconstituting the University of Calcutta, and the second establishing the University of Dacca, should be adopted by the Imperial Legislative Council; (ii) that the first Statutes of each University should be appended as a schedule to its Act; (iii) that the first Vice-Chancellors of both Universities should be appointed, and their salaries fixed, by the Government of India; and (iv) that the same Government should appoint an Executive

[1] Chapter XXVIII.

[2] *Ibid.*, paras. 75-92.

Commission, with special powers, to carry out the necessary changes in the University of Calcutta. Any future change in the fundamental Acts (as distinct from the Statutes) would of course have to be made by the original enacting body, the Imperial Legislative Council; and, indeed, it seems to us essential that fundamental university legislation should continue to be, for British India, a function of the Imperial Government. On this point we shall have something to say later.[1]

4. But apart from fundamental legislation, and from the initial arrangements necessary to bring the new system into operation, we propose that the Government of India should cease to have any special or peculiar relationship with the universities in Bengal, those functions of Government which under the new system will involve direct and frequent contact with the University being transferred to the Government of Bengal. We propose, however, that the Governor-General should assume, under the Acts, the office of Visitor of both Universities. To this recommendation we attach great importance, and in a later section we shall analyse the significance which we think ought to be attached to the office of Visitor, and the ways in which its functions might, in our judgment, be performed with most advantage. In the meantime it will be desirable to analyse the new relations which we propose should be established between the two Universities and the Government of Bengal.

II.

5. We recommend that the Governor of Bengal should be, *ex-officio*, Chancellor both of the University of Calcutta[2] and of the University of Dacca[3]; and that the Government of Bengal should exercise certain clearly defined functions in regard to the administration of both Universities. It will be convenient to deal first with the functions of the Government as a whole before considering the special duties and powers of the Chancellor.

6. In the first place, we propose that the division and clash of responsibilities between the Government and its Department of Public Instruction on the one hand, and the University on the other,

[1] Para. 45 below.
[2] Chapter XXXVII, para. 20.
[3] Chapter XXXIII, para. 170.

which has introduced so much confusion in the administration of secondary education, should be brought to an end by the establishment by Government of a Board of Secondary and Intermediate Education,[1] upon which the Universities, industrial, commercial, professional and agricultural experience and the Hindu and Musalman communities should all be effectively represented. This Board would exercise the functions of inspection, aid and recognition, in regard to the high English schools, which are at present divided between the Department and the University; and it would exercise these functions not only in regard to the high schools but in regard to the proposed new grade of intermediate colleges. It would be the duty of this Board to administer (subject to Government audit and approval) the funds which Government found it possible to devote to these ends, and to advise Government as to the needs of these branches of education.

7. This new organisation of an important branch of public administration should recognise to the full the responsibility inherent in the University for the right orientation of courses of study in secondary schools in so far as they are ancillary to academic training. But it would relieve the University of administrative functions now devolving upon it, which it cannot adequately perform; would furnish the Government, as representing the community, with clearer guidance as to the needs of Bengal; and would make possible a well-considered and systematic policy of advance in secondary and intermediate education. It would also call into operation that powerful public interest in this branch of educational work which is at present insufficiently used, and would probably stimulate private generosity in a field where some supplementation of the public resources from this source is eminently needed.

8. We propose that the Board should conduct both the examination at the end of the high school course, and that at the end of the intermediate course. In regard to the standards of the latter examination, it is essential that the University should have a very weighty, and for its own purposes a decisive, voice, inasmuch as it will, in some or all of its forms, constitute the qualification for admission to the University. But Government

[1] See Chapter XXXI.

also must have a definite voice at this point, inasmuch as this examination will (if our recommendations are adopted) constitute a necessary qualification for admission to many of the minor Government posts.

9. In regard to the regular work of the University, we propose that the functions of Government should be much less detailed than they now are, but, we believe, more rather than less valuable. In regard to university legislation, we propose that the assent of the Government of Bengal should be required for all changes in, or additions to, the Statutes of either University which may be proposed by the Court of the University. As we have recommended that a Statute should be required for the admission of a college in Calcutta to the rank of a constituent college in the teaching university, and for the admission of a mufassal college to the special privileges of a University College, it follows that the approval of Government would be required in each of these cases for the conferment or withdrawal of these privileges. This may seem to be little more than a reproduction of the present system, whereby changes in the Regulations of the University have to be approved by the Government of India. But, under our scheme, the necessity for Government confirmation applies only to Statutes, not to Ordinances or Regulations.[1] Statutes will deal only with broad and fundamental questions, on which it is right that Government should have the right of approval or disapproval; and the system proposed corresponds with that which exists in the modern English universities which are required to submit all changes in their Statutes to the Privy Council.

10. We propose that the Government of Bengal as such should be directly represented upon the main governing bodies of the Universities. In the University of Calcutta, the members of the Bengal Executive Council, and a considerable number of officers concerned in departments which have a bearing upon university work, will be members of the University Court; and although they will be greatly outnumbered by the other elements in the Court, their judgment upon the questions of general university policy which the Court will discuss must have great weight. Of the seventeen members of the Executive Council of Calcutta

[1] For the meaning of these distinctions see Chapter XXXVII, paras. 15-17.

University two will be directly nominated by the Government of Bengal, in order to ensure that the chief administrative organ of the University does not get out of touch with the general educational policy of Government. In the same way, and for the same reasons, there will be two representatives nominated by Government upon the Academic Council, and two upon the Board of Mufassal Colleges. Apart from this, the Government of Bengal will not nominate the members of the governing bodies of the University. But the fact that Government provides, and will long continue to provide, a very large proportion of the funds necessary for the development of university education will ensure that the opinions of its spokesmen will receive due weight.

11. Since the University of Dacca will, if our proposals are accepted, be a purely local and teaching university, having no separately organised collegiate bodies within itself, and no connexion with outside colleges such as is necessary in Calcutta, the points of direct contact with Government will be fewer. But subject to this proviso we propose that the direct participation of Government should be the same in kind and in degree in the University of Dacca[1] as in the University of Calcutta. The approval of Government will be required for changes in Statutes; it will be well represented on the Court, and through the Chancellor will exercise some influence over the composition of the Executive and Academic Councils. But apart from this, it will not be called upon to exercise any detailed interference in the educational affairs of the University. This represents a marked departure from the policy of complete and direct Government control advocated in the original Dacca University Report.

12. It is in the sphere of finance that the relations between Government and the University must necessarily be most intimate. We propose[2] that Government should make a fixed annual allotment to both Universities, and to the various colleges included in the University of Calcutta, attaching such conditions as it may think fit to any part of such grants; and that it should then leave to the authorities concerned the responsibility for making the best use of these funds, requiring only a full annual statement of accounts, audited by the appropriate Government department,

[1] Chapter XXXIII.

[2] Chapter LI.

which should cover the whole income and expenditure of the University, and show clearly what use has been made of the Government grants. We propose further—and this also we regard as an important reform—that all requests for additional grants for the purpose of university education, whether put forward by either of the universities or by any of the colleges or institutes included within the University of Calcutta, should be laid before Government at a fixed time in each year; reasonable provisions being made for dealing with urgent requests. This presents no difficulties in the case of Dacca. In the case of Calcutta it involves that applications of colleges and other bodies should be forwarded to Government only through the Executive Council of the University, which should add its own comments and recommendations.[1]

13. Government would thus have, what it has never had in the past, a clear formulation of the requirements of the various educational grades. The needs of the Universities, and of all the colleges and all the institutes of higher technological study connected with them, would be for the first time collated and classified, with commentary and advice, by the Executive Councils of the two Universities, each within its own sphere; the needs of the high English and intermediate grades would be formulated by the Board of Secondary and Intermediate Education; while the needs of the remaining grades of education (including those of the primary grade,[2] which would be ascertained after consultation with the District Boards) would be formulated by the Department of Public Instruction itself. Government would thus be in a position, as never before, to take a broad view of all the needs, and to make a just apportionment of the available funds among them.

14. Perhaps the most important aspect of the changes thus proposed is their effect upon the existing Government schools and colleges. Schools and intermediate colleges financed out of public funds would, under our proposals, pass under the control of the Board of Secondary and Intermediate Education, on whose advice,

[1] See Chapter XXXIV and Chapter XXXV.

[2] We have not entered into the question of the reorganisation in respect of technical instruction of grades lower than the university grade, which will be necessary if or when the recommendations of the Indian Industrial Commission are adopted.

subject to such general provisions as might be laid down by Government, the funds available for these branches of work would be distributed.[1] As for degree colleges, we are of opinion that direct Government management is not the best form of administration and should be replaced gradually by other arrangements. We have therefore proposed (i) that the University of Dacca[2] should be placed under the responsible management of its executive council, who should have, as already noted, freedom in the expenditure of a fixed annual grant; (ii) that Presidency College, Calcutta,[3] Bethune College, Calcutta,[4] and the Engineering College, Sibpur,[5] should each be placed under the direction of a governing body, with freedom to administer a fixed annual grant upon such general conditions as Government may define, to accept gifts, and to determine fees, salaries, etc., within such limits as may be fixed; in the case of Presidency College we further propose that a certain number of chairs, to be known as Presidency Chairs, should be established, and should, after the first appointments, be filled on the nomination of special selection committees including representatives both of the University and of the college;[6] (iii) while, in the case of the Government colleges in the mufassal,[7] we propose that so soon as it is determined which (if any) of these colleges are to be developed into university colleges and to obtain membership of the special panel of the Mufassal Board, these colleges should be provided with distinct governing bodies and fixed annual grants, any increment in their revenues from public funds being thenceforth derived from such funds as Government may find it possible to place in the hands of the Executive Council of the University for the development of university training in the mufassal. Any Government colleges which do not succeed in attaining this rank should, in our judgment, be reorganised after a reasonable interval as intermediate colleges, and placed under the direction of the Board of Secondary and Intermediate Education.

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[1] Chapter XXXI.
[2] Chapter XXXIII.
[3] Chapter XXXIV.
[4] Chapter XXXVI.
[5] Chapter XLVI.
[6] Chapter XXXIV.
[7] Chapter XXXV.

15. Until these readjustments have been carried into effect, it may well be advisable to retain the present system of direct Government management. But this would only be a temporary and provisional arrangement. Ultimately Government would cease to be responsible for the detailed management of institutions supplying university training. We suggest that the Government grants to university teaching institutions should be liable to revision at fixed intervals, say of three or five years, though this should not debar special applications; and that at the time of such revision a formal inspection of the colleges by Government, perhaps in conjunction with the University, might play a useful part. But it seems to us essential that Government should be disembarrassed of the responsibility for the detailed management of institutions of this type, since Government management would be inconsistent with the new type of university organisation which we propose.

16. The changes here advocated must necessarily affect deeply the Government Educational Services. This subject is, however, so distinct and so important that it will be dealt with in a separate section.

17. We next turn to review the functions which we propose should be allotted to the Head of the Government of Bengal in his capacity as Chancellor of the Universities. These functions ought to be, in our judgment, of the highest importance and value to the life of the University, but they ought to be quite different in character from those now exercised by the Chancellor. In our view it is the principal duty of the Chancellor to act as an impartial judge between the various interests and communities which must be represented in the University, and to ensure that none of them has reasonable ground of complaint.

18. In order that he may be in a position to play this part, we have proposed (*i*) that all Ordinances as made should be communicated to him, and that he should have the power to veto any Ordinance;[1] (*ii*) that he should have the power of nominating a number of representatives upon the Court of the University, and also of conferring the privilege of life membership of the Court upon persons of distinguished eminence in learning, or who have

[1] Chapter XXXVII, para. 16.

rendered great services to education ;[1] (*iii*) that he should appoint two members of the Executive Council, one a Musalman and the other a representative of industry and commerce, and should also, after report from the Executive Council, select one of the two heads of colleges in Calcutta to be included in the same body ;[2] (*iv*) that, in view of the diversity of the interests to be represented in the Academic Council, the Chancellor should nominate one-half of the representatives in various categories ;[3] the object in this case being to ensure that no relevant and important interests were disregarded ; (*v*) that he should appoint a certain number of members of the Mufassal Board,[4] of the Board of Women's Education,[5] and of the Muslim Advisory Board ;[6] and, perhaps the most important of these nominating functions, (*vi*) that he should, after receiving suggestions from the Academic Council, appoint the three external experts whom it is proposed to include in all committees of selection appointed in Calcutta or Dacca for university professorships and readerships,[7] and who will bring to these supremely important duties not only special knowledge, but an acquaintance with the possible field of selection outside Calcutta itself.

19. In the University of Dacca the Chancellor's duties would be less various, because the system of Government of that University is simpler. But, as in Calcutta, the Chancellor will have the power of vetoing ordinances, of nominating a number of members upon the Court, the Executive Council and the Academic Council, and of appointing outside experts as members of selection committees.

20. These are highly important functions ; and they will enable the Chancellor to play an extremely valuable part in ensuring the smooth working of the new university system. But there remains yet another function, more general and more difficult to define in exact terms, which it, nevertheless, seems to us essential that the Chancellor should undertake, in both universities, but which will

[1] Chapter XXXVII, para. 31.
[2] *Ibid.*, para. 42.
[3] *Ibid.*, para. 48, clauses (*d*), (*f*), (*h*), (*i*) (*k*), (*l*) and (*m*).
[4] *Ibid.*, para. 80, clause (*f*).
[5] *Ibid.*, para. 84, clauses (*j*), (*k*).
[6] *Ibid.*, para 87.
[7] Chapter XXXIV, para. 115.

be especially useful in a university embodying so many and such diverse and possibly conflicting interests as the reconstituted University of Calcutta. If any college, or any community, or any special interest in the University thinks it has been denied equal opportunities, there ought to be a right of appeal; and we therefore propose that in such a case the aggrieved body should have the right of formally approaching the Chancellor with a petition that an enquiry should be held, and that the Chancellor should, if in his judgment there is *primâ facie* a case for an enquiry, appoint a small investigating commission of men of standing not directly concerned in the management of the University.[1] Such a commission ought to have full power to call for papers and to take evidence. On receipt of its report, the Chancellor would communicate its findings to the Executive Council. We hope and believe that this power of appeal to the Chancellor would rarely be used, or need to be used; but its very existence would be a safeguard against possible dangers, and give reassurance to some timid elements.

III.

21 In regard to the relation of the Educational Services to university work, we have already adduced[2] what appears to us to be convincing evidence in favour of the view that the drawbacks of the system, under the conditions now existing, go far to outweigh its advantages in this sphere of educational activity. We think that the time has come when fundamental changes ought to be made in the system of recruitment for university work. The changes advocated by the Public Services Commission, or some modification of them, might have sufficed for existing conditions. The Commission themselves recognised that their proposals were constructed in view of the maintenance of the existing university mechanism, which the terms of their reference did not permit them to consider or discuss.[3] But we have recommended a reconstruction of the university system of the most far-reaching character, which must, if adopted, deeply affect all university teaching posts in Bengal. In our judgment the system of service

[1] Chapter XXXVII, para. 90.
[2] Chapter XXVIII, paras. 93-116.
[3] Report, page 107.

appointments for university work should be reconsidered in relation with the whole problem of university organisation.

22. The functions at present performed by members of the Educational Services may be divided into three categories, each of which ought, in our judgment, to be separately dealt with. In the first place there are the functions of administration and inspection. In regard to these, we have no changes to suggest, these being functions for which a service organisation is natural and appropriate; but while we think that if the present system of service appointment, or some modification of it, is retained for this purpose, the appointments should be specially made with a view to this kind of work, we also think it would be undesirable that the appointment of men or women engaged in other branches of educational work should be made difficult or impossible. But if arrangements of a new kind are to be made (as we shall suggest) in the other branches, it would be necessary to provide that persons appointed to the administrative educational service who had previously worked in schools or colleges should for purposes of pension and of standing in the service receive credit, on an agreed basis, for the length of their service in these other branches.

23. The second branch of educational work is that of university teaching; the third that of teaching in schools and intermediate colleges. These ought to be separately considered. But in both alike, as also in the administrative branch, the changes which seem to us to be necessary will have to be gradually effected in order to avoid a sudden dislocation. In particular, in all cases, the rights, present and prospective, of all existing members of the services must be scrupulously safeguarded. They must obviously retain the right of completing their term of service under the present conditions. And in view of the fact that, if our proposals are carried into effect, some may feel that their prospects may be substantially affected, it might fairly be urged that existing members of the services should be given the option of retiring with a compensatory grant proportionate to the length of their service.

24. In regard to the work of university teaching, our recommendations involve:—

(*i*) That in the University of Dacca, and in any similar university (of the unitary type) which may subsequently be established, all teaching posts should be university

posts, and should be independently and individually filled by the mode of appointment determined by Statute.[1] In order to ensure the presence upon the university staff of a sufficient number of western-trained men, we have suggested a mode whereby a certain number of posts might be filled on the nomination of special selection committees in London, including a representative of the University, but otherwise appointed by the Secretary of State.

(*ii*) That in the University of Calcutta (a type which is likely in some respects to remain unique) (*a*) those Government colleges which are to play the part of constituent colleges in the Teaching University should be placed under the control of special governing bodies, who should have power to make appointments direct, in the same way as the Executive Council of Dacca University; (*b*) University chairs (whether financed by Government or from other funds, or attached to a college) should likewise be independently filled in the mode already recommended;[2] though, in the special case of the group of Presidency chairs whose establishment we have recommended,[2] we propose that the appointments should be made on the nomination of selection committees in London, appointed by the Secretary of State, but including also representatives both of the University and of the college;[3] (*c*) Government colleges in the mufassal, if and when placed in the category of University Colleges or 'potential universities'[4] should also be placed under the control of special Governing Bodies, which should have the power of making appointments. Thus no teaching posts concerned with university work would ultimately remain under the present conditions of Government service.

[1] The first appointments after the establishment of the university would in the main be filled from the existing services. See Chapter XXXIII.

[2] Chapter XXXIV.

[3] In these cases also the first appointments would be mainly filled from the existing services. See Chapter XXXIV.

[4] Chapter XXXV.

25. We have recommended that all the principal teaching posts in the universities or colleges under the new system should be held on a secure tenure, with an assured salary rising by regular increments, and with pension or superannuation rights. They would thus be, in themselves, as attractive in a material sense as the existing service posts; while they would possess two further advantages, first, that the holder would be free to accept appointment to any other post which offered itself,[1] and, secondly, that he would know precisely the work expected from him, that he would be able to concentrate all his attention upon his university work, and that he would not be liable to be suddenly removed, without his own consent, to work of another kind.

26. We have further recommended that the normal salaries of university teaching posts should be determined solely with a view to the nature of the work required, and that no distinction whatsoever should be made, on grounds of religion or nationality. At the same time, believing, as we strongly do, that the services of British and American teachers are required, and will long continue to be required, under the conditions existing in Indian universities, we have contemplated and provided for the necessity of making special arrangements to meet this need.

27. We are convinced that, for real university work, appointments offered on such terms, with guaranteed security of tenure, would be in themselves not less attractive, but to many men more attractive, than posts on the existing service basis; while their holders would feel that their allegiance was due primarily to the University for which they were working, and would therefore command a greater confidence among their students than, in the existing circumstances, members of the services are always able to secure. A body of university teachers of this character, well selected, holding their posts by a secure tenure, and therefore independent, would form an element in the shaping of public thought in India the value of which it is impossible to over-estimate. One of the greatest defects of the service system has been the fact that their very position as Government officers has robbed members of the services of the influence upon opinion which they ought to be able to exercise, and has precluded them from the expression of

[1] This freedom would, of course to some extent, depend upon the extent to which it is possible to arrange a common pension or superannuation system for all India.

their judgment upon many questions on which it would have carried very great weight. We consider that the methods of appointment which we have suggested[1] are such as to ensure the appointment of the best available men, and the formation of a sound judgment as to whether any particular appointment ought to be made in India or abroad. We shall later recommend a mode in which the Government of India may be able to give material assistance in making appointments.

28. It is in our judgment highly important that the normal salaries attached to university posts should be fixed at such rates as will attract some of the ablest men in Bengal, and at the same time correspond to the scale of living and the rate of remuneration characteristic of the country. To attempt to fix the normal salaries of all higher posts at such rates as would attract candidates of the best type from other countries would be to establish a scale higher than that which exists anywhere in the world, and would cripple the development of university work at a very critical time. At the same time, we recognise the necessity of enlisting in the service of the universities men who come from a distance—not only from Britain and other western lands, but from other Indian provinces; and such men must be paid more than they would accept for service in their own country or province. It is in part to meet this need that we have suggested that certain appointments should be reserved for western-trained men (not by any means necessarily Europeans), and that nominations to these posts should be made in London, the selection committees being supplied with information regarding suitable candidates in India, who would of course not be excluded from consideration. To these posts substantial salaries would naturally be allotted. But we do not think that this provision would meet the whole of the need. Occasions are likely to arise, both in regard to these special posts, and in regard to other posts, in which the Universities might find it necessary to offer more than the normal salary in order to obtain the services of the best available man. We suggest that in such cases the Universities should be encouraged, if their own funds are insufficient to meet the need, to ask for special assistance from Government. Such requests should be treated as urgent, and should not be delayed on the ground that they must wait till

[1] Chapter XXXIV

the annual allocations of funds for university purposes are made. But, if granted, they should hold good only for the particular person for which the individual appointment is made.

29. In regard to the staffing of the proposed intermediate colleges, and (so far as they are affected) the high English schools, we are convinced that a wide departure from the present system is desirable and should be gradually effected. The sharp differentiation which now exists between the method of staffing the private schools and colleges and the method of staffing the Government schools and colleges is in our judgment an obstacle in the way of a unified organisation of these grades of education. We have therefore recommended that ultimately, after making every provision to safeguard the rights and claims of existing members of the services engaged in these grades of work, the staffing of these institutions, whether privately run or controlled by Government, should be organised, so far as concerns the great mass of their ordinary teachers, on a professional and not on a service basis. Our proposals in this connexion have been fully explained in an earlier chapter.[1]

30. We recognise, however, that there is a great need, in these educational grades, for the services of a large number of men and women trained in western methods. This need will be especially great if it is decided to carry out the far-reaching reforms in educational methods which we recommend. To transform the methods of school-teaching, to introduce more efficient instruction in English and in science, to train an army of teachers on new lines, to reconstruct the methods of dealing with the problems of girls' education: these are tasks so great that they must necessarily be beyond the existing teaching resources of Bengal, and will require the recruitment of a large number of teachers who, whether they be Indians or Europeans, have undergone a training in modern western methods. But such a recruitment would be impossible on a professional basis such as would be suitable for the bulk of the ordinary teaching work of Bengal. It must involve special engagements on special terms, varying according to the kind of work required. To meet this need we have proposed the creation of a special corps of teachers, whose salaries would be paid by Government, and who would enjoy pension rights or an equivalent. In a sense such a corps may be

[1] Chapter XXXI, paras. 99-104.

described as an Education Service of a new kind. But it would differ from the existing services in several vitally important respects. In the first place, the services of members of such a corps would not be limited to Government institutions, but could be freely shared by private institutions also. In the second place the members of such a corps, though they might be recruited on widely varying terms, would not be graded in a rigid hierarchy with clearly marked distinctions between one class and another and with practically unalterable rules as to salary, pension and promotion. The system would be elastic, and capable of easy expansion or reduction as the needs of education in the country might demand. In the sense in which the term is now ordinarily employed in India, the 'service system' would disappear for this grade of work, though the members of the proposed corps would be in the fullest sense direct servants of Government. Our proposals in this respect are more fully set out in Chapter XXXI.

IV.

31. In an earlier chapter[1] we have analysed with some fullness the influence upon university work, and indeed upon the whole educational system, of the fact that degrees and other university qualifications are treated as the conditions of admission to various grades of Government service. The conclusion towards which the evidence analysed in that chapter seemed to point was that the existing system was in many ways exercising a deleterious effect upon the work of the universities and the schools, but that a sudden and complete departure from it, such as would be implied in the establishment of a quite distinct series of competitive examinations, might have an equally unhappy effect, by encouraging the growth of cramming institutions, and by compelling the universities and the schools to adapt their courses to these examinations.[2]

32. It is in our judgment essential for the healthy development of the educational system of Bengal to discourage the notion that a degree course is the best mode of approach, not merely to Government positions of importance (for which high university qualifications may very rightly be demanded), but also for minor

[1] Chapter XXVIII, Section VIII, paras. 117-149.

[2] This aspect of the question is very cogently discussed in the Government of India education resolution, 1904, to which fuller reference is made in Chapter XXVIII.

posts and mere clerical positions. On the other hand, it is equally essential that an honest pursuit of the recognised courses of study should be regarded as the proper preparation for the public services, as for other careers. These two ends are by no means irreconcilable, once the aims and purposes of the various stages and grades of educational work are clearly defined and differentiated; and to do this is one of the main ends of our proposals. Finally, it seems to us highly important that the conditions of appointment should be so arranged as to discourage boys and young men from hanging about idly, year after year, in the hope of winning appointments, and from striving to forward their fortunes by the assiduous cultivation of private influence. This end can best be secured if in the majority of cases quite clear and definite tests for admission to service are set up, failure in which will mean exclusion and will make it plain to the boy that he had best seek his livelihood in some other channel without wasting time.

33. To meet these needs we suggest the desirability of establishing, under the provincial Government, and also with the Government of India, small Civil Service Commissions, whose duty would be to review the whole series of Government posts and clerkships falling within their purview; to define the stage of educational training which will be required in each case before a candidate's name will be considered; to make such arrangements as will ensure, in the filling of public posts, due regard to the claims of various communities; and, finally, to conduct competitive tests for the selection of candidates from among those candidates who had reached the required stage of educational progress. In some cases the competition might be limited to the particular communities from which it was felt to be desirable to make particular appointments; while, in every case, any candidate who could not produce satisfactory evidence of good character would of course be excluded from the competition.

34. For some classes of posts the examination at the end of the high school course might be a sufficient qualification. For very many the examination at the end of the intermediate course would be appropriate, and in particular cases special forms of this examination (*e.g.*, the commercial or the agricultural group[1]) might with advantage be exacted. For yet others a degree, or a

[1] See Chapter XXXII.

degree with honours, ought to be the minimum. The competitive tests ought in our judgment to be constructed on the assumption that the candidate was already generally qualified, and they need not therefore cover the whole range of his knowledge. They should largely consist of tests of intelligence, for which special preparation would be inappropriate, of the order described and illustrated (at a more advanced stage) in the recent admirable Report[1] of the Treasury Committee on Civil Service Class I Examinations (1917) in England; in some cases tests of the aptitudes or accomplishments specially required for the posts in view might be added. The adoption of such a system would, in effect, be a return to the sound principles enunciated in the great despatch of 1854.

35. But while we feel that, with the modifications suggested above, the introduction of a competitive system would have many good results, we recognise that it cannot be applied without limitation or qualification. There is no country—not even Britain, where the system has been carried further than elsewhere—in which the power is not reserved to appoint candidates for whom, while they may be admirably fitted by character or experience, competitive examination would not be the appropriate method of selection. Nominations of this kind, however, ought be submitted to the proposed Civil Service Commission for its approval.

36. We are convinced that the establishment of such a system, if properly related to the various defined stages of educational progress, would be equally advantageous to the public services, to the universities, the intermediate colleges and the schools, and to the students. The public services would obtain better recruits; the universities might be relieved from a number of ill-qualified students who at present go on to the degree stage, while both the university, the intermediate colleges and the schools would be assured that their work obtained due recognition; the students would know where they stood, what opportunities were open to them, and on what conditions, and would be saved from the ignominious task of place-hunting, to which many of them now devote too much of their time. And we may add that many public officers would have reason to rejoice at being relieved from the

[1] See especially that part of the report which deals with the general or compulsory part of the proposed new examination.

invidious, difficult and time-devouring duty of selection, which is now imposed upon them, and from the ceaseless importunities of anxious applicants. We cannot but feel that a well selected commission would be likely to be quite as successful as individual officers now are in excluding undesirable candidates; and it is not unlikely that the cost of working the Commission, which would not be great, would be more than met by the saving of the time of public officers which their work would effect.

37. There remains for consideration a very important problem which has hitherto left the system of university training in Bengal unaffected, but which may become, in the near future, a matter of the utmost moment. Hitherto the higher posts in the service of the State—those of the Indian Civil Service—have been awarded only in England, and on the basis of the kinds of courses pursued in British universities; and those Indians who have obtained admission to the Indian Civil Service have done so by going to England to work for the examination. It is now proposed that many of these appointments should be made in India. It is obviously no part of our duty to discuss this proposal in itself. We assume it to be both necessary and inevitable. But what concerns us is the probable effect of the change upon the Indian university system. If the appointments made in India are to be made purely on the basis of an examination corresponding to the present Indian Civil Service examination, the effects upon the universities must be profound. Whether the subjects and the papers were the same as those prescribed in England, or whether a new examination were devised, in either event the scheme of university studies, in all the Indian universities, would inevitably be deeply influenced, and might be distorted by the necessity of preparing for these examinations.

38. On this point we have received from Mr. H. J. Maynard,[1] Vice-Chancellor of the Punjab University, an answer so clear and cogent that, though we have already quoted from it,[2] we do not hesitate to quote again. Mr. Maynard points out that the effects of such an examination upon the universities must necessarily be much more profound in India than it is in Britain.

"The civil services in the United Kingdom are only one group of openings for the capable student. The most ambitious and the keenest of all are not

[1] Question 15.

[2] Chapter XXVIII, para. 138.

content with the modest and assured subsistence which these services offer. The position is certainly different in India, where alternative openings are very few, and salaries in the superior services are, by the Indian standard, high; while the social position of a Government servant of 'gazetted' status is immensely coveted. A real competitive examination held in India for such a service as the Indian Civil Service would entirely dominate the course of higher education; and, unless the universities took to teaching its subjects and to paying a good deal of attention to the probable requirements of its examiners, students would turn elsewhere, and cramming establishments would be thronged."

39. We share Mr. Maynard's apprehensions; and for these reasons, it seems to us to be of the most vital importance to the work of the universities, and to the progress of learning in India, that when the methods to be adopted in making appointments in India to the Indian Civil Service are taken into consideration, the probable effects of whatever method may be proposed upon the whole system of university training should be very carefully weighed; and, in particular, that due attention should be given to the dangers which may attend the institution of a new examination of this importance outside and independent of the university system. One of the main evils which we have noted in the existing system, and against which our proposals of reform are largely directed, is the sterilising dominance of examinations over teachers and students. An examination of the type indicated might exercise a domination still more terrible; and in that event we do not think it too much to say that the prospect of a great development of honest study and of real learning such as we believe to be attainable might be blighted.

40. A system of competitive examinations, as the Indian Public Services Commission have well indicated,[1] can only be successful in producing the best type of men, men of independent minds and of real initiative, if it is so adjusted to the educational system of the country as not to demand from candidates any serious departure from the normal courses of study laid down by that system, or from the natural and healthy pursuits, social, athletic and intellectual, which no system of examinations can fully test. If it is to have any chance of permanent success, a purely competitive system would have to be adapted to the university system of India. But our survey of that system, at any rate as it works in Bengal,

[1] Report, page 29.

shows that it is yet far from giving the encouragement and recognition which it ought to give, to independence and originality; and that as things now are, far from cultivating, it tends to repress and to starve those activities of the student, outside the class-room, by which, far more than by any examination, character is moulded and tested.

41. A system of examinations, therefore, which was adjusted to the existing Indian university system if that system is left unreformed, would not give any sort of guarantee of producing the kind of men who are needed for great administrative offices; on the contrary, it would inevitably tend to accentuate and encourage that tendency to reliance upon mere unintelligent memory-work which we have so often deplored, and which debilitates the mental vigour of the student, and impairs his power of initiative. Just as the necessary preliminary to a more discriminating use of the lower grades of education for the selection of candidates for the minor public services must be a reorganisation and revitalising of the work of these educational grades, so, in a still higher degree, the necessary preliminary to the successful introduction of a purely competitive method of filling higher posts must be a drastic reform of the university system.

42. When that reform is effected it will be possible to fill the highest posts from among men who have distinguished themselves in the pursuit of real 'honours' work in appropriate subjects of university study, by imposing upon them a test of intelligence and originality of the order of that suggested by the Treasury Committee on Civil Service Class I Examinations in England. But unless and until a real reform of the university system is carried out, the sudden introduction of an unqualified competitive system might be productive of disastrous results. The fear that the promising growth of a new vitality in the university life of Bengal might thus be cramped and distorted must be our excuse for touching upon a very important issue which, in other aspects, lies beyond our province.

V.

43. The problem discussed in the last few paragraphs shows how impossible it is for the supreme Government of India to dissociate itself from the work of the universities. Its action must in any case deeply affect their fortunes; and however far the

process of devolution to provincial Governments may be carried in the educational sphere, there must necessarily remain many functions of the highest importance which the Government of India, and only the Government of India, can perform.

44. The most important of these functions is that of issuing, or revising the terms of, the fundamental instruments—Act or Charter—whereby a university is brought into existence, and from which it derives its powers. If the university system of India is to retain a reasonable degree of unity, and to maintain a standard of training such as will be respected and recognised throughout the world, it is essential that the creation of new universities (which is likely to take place on a considerable scale in the future) should not be too lightly permitted, and that a single authority should be responsible for determining what is the degree of strength which an institution ought to possess before it can be given university rank. We urge, therefore, that the power of passing Acts or Charters constituting universities, or of modifying or revising the Acts or Charters of universities already in existence, should be reserved by the Government of India and the Imperial Legislative Council. This has an important bearing upon that part of our proposals for the reorganisation of the university system in Bengal which contemplates the gradual rise of new centres of university rank in the mufassal. The encouragement and assistance of these centres will be the work of the new governing bodies of Calcutta University and of the Government of Bengal. But the final decision as to whether any one of these centres deserves full university rank is a matter which affects not Bengal alone, but all India, since it must influence the recognised standard of university work throughout the country. The making of the decision ought therefore to be the duty of the Government of India and of the Imperial Legislative Council.

45. But besides this fundamental power, which, in the nature of things, would not be often exercised, there are other functions which would influence the ordinary working of the existing universities, and which ought, in our judgment, to be undertaken by the Government of India. The first of these is the function of *Visitation*. Hitherto there has been no attempt at a systematic and periodical survey of the work of the Indian universities. We submit that the visitatorial power over all universities, which is in fact inherent in the Governments of all countries, and which we have

proposed to formalise by the assumption of the office of Visitor of the Universities of Calcutta and Dacca by the Governor-General, should be exercised by a regular visitation of the universities at intervals of (say) five years. The visiting committee should include at least one distinguished scholar from overseas, with experience of university methods and organisation in various countries; its other members should be men of Indian experience. They should take a comparative view of the work of the universities, and their report should include, not only detailed criticisms, but a broad survey and an appreciation of good work wherever accomplished.

46. The second function is that of *Co-ordination*. It would in our judgment be desirable that the Government of India should maintain an organisation which could keep it continuously in touch with what is going on in the various universities, as well as in the other educational grades in all the provinces. It might encourage, subsidise, and assist the provincial Governments in organising a variety of educational experiments, choosing for each the most suitable area, and describing and elucidating the results for India as a whole. It might carry much further the useful practice which it has initiated in recent years of holding educational conferences of various types: there have, as yet, been no university conferences, no conferences of teachers of history or science or the like, on a sufficiently wide scale. It might help to facilitate the interchange of students (within reasonable limits), and still more of teachers, between the various universities. It might, above all, help to avoid overlapping, and the waste which is apt to result from it, by encouraging universities, while making adequate provision for the general education which it is the duty of all to afford, to specialise in various kinds of work; and by making it easy for students to resort to those universities in which the kind of work they needed was specially cultivated.

47. There is no sphere, as we have already urged[1] in which this function of co-ordination is more needed than the sphere of higher technological, including agricultural, training. India is entering upon a period of rapid industrial development, and it is being widely recognised that the success of this development must depend largely upon the increase of facilities for technical training, both in its lower and in its higher grades. But two tenden-

[1] See Chapters XXV, XLVI, XLVII and XLVIII.

cies are now perceptible, each of which is apt to be dangerous. On the one hand, every province and every university is tempted to think that it ought to undertake to provide training in all the subjects needed: that is the natural result of the tradition which treats the universities as water-tight compartments, each complete in itself. But while such a policy may be legitimate enough in the ordinary grades of technical training, in some more highly specialised subjects, where the aim is to produce a small but essential number of highly trained experts, great care must be taken to avoid the waste and inefficiency which may arise from overlapping: waste, because the provision of this kind of training is extremely costly, and ought not to be needlessly reduplicated; inefficiency, because India, like other countries, cannot find sufficiently well qualified staffs for more than a few institutions of this kind.

48. On the other hand there is a tendency to advocate the complete centralisation of work of this kind under the control of departments of the central government, and to sever it entirely from the universities. This is a not unnatural tendency, in view of the methods of study hitherto pursued by Indian universities, and the curiously unpractical attitude, the pathetic trust in the efficacy of mere regulations and examinations, which the university tradition has produced among those who are now for the first time seriously envisaging these needs. But to sever higher technical training altogether from university work must be bad for both: bad for technical work, because such work is apt to become mechanical and unoriginative when divorced from pure science, and because it would (especially in India) fail to attract many desirable students if cut off from the University; bad for university work, which is apt to become unreal if unrelated to its practical applications. Moreover such a system must involve great waste in the erection of laboratories and the provision of staffs. To avoid these twofold dangers, a correlating agency for all India, working in close touch with the universities, is necessary; and such an agency the Government of India can alone supply.

49. What applies to the technological subjects applies also (though in a somewhat less degree) to other fields of study, less costly to maintain. And in all these cases it should be noted that if there is to be a departure from the notion that every university should deal on the same full scale with all subjects; and if,

instead, the idea is to be encouraged that (in some of the higher branches of their work) universities should specialise, it follows that the central agency which helps to guide and advise the universities in this direction ought to have at its disposal considerable funds out of which to subsidise these special branches of work. In the great mass of their work universities may very properly look for the necessary assistance to the provincial Governments; but for that part of their work which is calculated to attract students from all parts of India, they ought to be able to look also for assistance to an all-Indian educational authority.

50. This brings us, by a natural transition, to the third great function which ought to be undertaken by such a central authority: that of *Stimulating and Promoting Research*. This is a duty which rests, of course, upon every university individually; every university must see that its teachers and graduates have access to the means of independent investigation, if for no other reason, for the maintenance of its own intellectual vitality. But more than this is necessary; otherwise the streamlets of individual activity are apt to get lost in the sands. We do not suggest that it is the duty of the Government of India to regulate and control the investigating work of the universities; any attempt in such a direction could lead only to the most unhappy results. But a central authority can do very much both to stimulate and to promote this kind of work.

51. As we illustrated the need of correlation from technology, we may illustrate this kindred need from the very different sphere of history. All over India there exist vast masses of unorganised and unexplored historical material, in many languages: not merely the contents of the Government archive rooms, but many family collections, and many records of existing or former Indian Governments, such as the admirably kept archives of His Exalted Highness the Nizam at Hyderabad, or the large Mahratta collections at Poona. The history of India cannot be fully explored until these collections are made available. They are not made effectively available merely by throwing open the archive-rooms to scholars. A student of the first two decades of the nineteenth century, for example, ought to work not only at the archives in the British muniment rooms, but at the Mahratta archives, the Nizam's archives, the Sikh archives at Lahore, and a multitude of other collections. Even

if he could find the time for such exploration, he would find his materials in many languages and in many scripts.

52. What is necessary is that all the most valuable of these materials should be printed, the most important documents in full, selections from the less important in summaries, and translated into English. This work can only be carried out by a great co-operative enterprise; it cannot be achieved by the sporadic endeavours of isolated university scholars. Like the corresponding treatment of the English archives, which are in some ways, though more complete, less complex and varied, it will only be possible if it is undertaken by Government, enlisting the services of a large number of scholars drawn from among the university teachers of all parts of India, fixing the main plan of the work, and entrusting to qualified men, under a competent general editorship, the production of a great series of *monumenta historica Indica*. The result of such an enterprise would be, not merely that the materials for Indian history would be made available, but, what is far more important, that the methods and spirit of sane and scholarly historical investigation would receive an immense stimulus in all the universities, like the stimulus which was given to English historical scholarship by the preparation of the Rolls Series and the Record Office publications. India needs nothing more than a wide diffusion of that sanely critical spirit in dealing with men and institutions which historical investigation should create. This spirit will grow but slowly if it is left to the disconnected and unassisted spontaneous effort of individuals.

53. In other fields other methods might be appropriate; but in all fields there is room and need for intelligent suggestion and assistance from a central organisation closely in touch with the work going on in all the universities. An annual survey of the independent work going on in Indian universities, made by competent persons, would form the basis on which a system of grants-in-aid of particular investigations might be organised: such grants might be modest in amount, and yet serve a very useful purpose of encouragement and stimulus. In the same way much good might be done by small grants to those all-India learned organisations which are striving, against great difficulties, to create in their own fields an Indian community of learning. But grants of these kinds could only be administered by a competent and well-informed central authority, closely in touch with

all the work of the universities, having access to the advice of scholars in all fields, and so wisely guided that it would not be misled as to the real value and seriousness of the various kinds of enquiry brought to its notice. There would have to be, not a mere office organisation of administrators and clerks, but something much more flexible and less fixed in composition; and there would be much to be said in favour of some method of calling into council for short periods, such as would not permanently divert them from their main work, scholars and men of science of various types drawn from all the universities and all the provinces.

54. A fourth vitally important service which the Government of India ought to be able to render to the universities is that of giving *Assistance in Recruitment* and of keeping them in touch with the available field of suitable candidates for their teaching staffs, both in India itself and elsewhere. In the Indian university system there is a real danger of too much inbreeding. In too large a proportion of cases the teachers, being students of the university they are called to serve, have no experience of any other traditions or methods of work. A central organisation, in touch with the work of all the universities and colleges, would often be able, without invading the responsibility of the individual university in the selection of its own teachers, to supply, in an informal and confidential way, useful information and advice about suitable men of promise who might be drawn from other provinces, and would thus facilitate that interchange of teachers which is so much to be desired, and which the use of a common medium of instruction renders possible.

55. Yet more important would be the service which it would be able to render in helping the universities to explore the available field of suitable candidates in other countries, and especially in Great Britain. It is one of the recommendations of the service system that it unifies and simplifies the recruitment of those European teachers whose aid India needs to-day, when, as we hope, she is entering upon an era of great advance, quite as much as she has ever needed them in the past. We have seen reason to urge that the service system, in its present form, has now outlived its usefulness as a mode of recruitment for university work. But if it is to be replaced by a scramble, in which each university separately—few of them being as yet well known to

European scholars—is to issue its independent invitations, the results may be far from happy. The Government of India might, with very great advantage, become the medium of communication between the universities and the possible recruits for their teaching work whom they wished to bring from Europe, America or the Dominions. It could perform this function all the better if it possessed an organisation which enabled it to obtain ready access to the best sources of information, and if it was in touch, as we shall suggest below that it should be, with a well organised Bureau of the Universities of the Empire. It could supply intending candidates with clear information as to the standing of the university which had a post to fill, and as to the kind of work, and the conditions of life, they might expect. An invitation coming through the Government of India would carry a weight which it would not otherwise possess.

VI.

56. In the coming unification of the British Commonwealth, no small part will be played by the universities; for the commerce of ideas must be yet more potent in bringing about mutual comprehension between the various elements in a great co-operation than the commerce of material things. To the cultivation and expansion of this commerce of ideas, from which all the participants will profit, too little attention has yet been given. And in the reorganisation of the intellectual life of India, which must accompany its political development if that is to have permanent fruits, it is as necessary that there should be more organic intellectual relations with the other great members of our partnership of peoples as that there should be more organic political relations. The British universities have been, in some sense, the parents of the university systems of all the British lands, as the British parliament has been the parent of their political systems. But there has been, in the one sphere even more than in the other, too little organised intercourse and mutual assistance. The British universities have yet much to give to their daughters; but the daughters also have much to give in return. It is needful that attention should be given to this aspect of our partnership of nations, and that we should find some mode of organised fellowship among the Empire's centres of thought, of such a kind as will in no way restrict or interfere with the freedom of each to cultivate its own garden, in

its own way. This is a very great theme, far outranging the terms of our reference; but without some treatment of it any discussion of the kind of development at which the university system of Bengal ought to aim must be incomplete.

57. In the future, as in the past, students from India, as from the other British realms, will resort in large numbers to the British universities. They will go in larger numbers than ever, but they ought to go with clearer ideas of what it is they seek; and in order that they may not waste their opportunities, there ought to be a clearer adjustment between their Indian training and the courses of study which they will follow when they go to England. And, on the other hand, there are branches of human knowledge which can be best studied, and in some cases can only be well studied, in India. For these subjects there ought to be a stream, small perhaps to begin with, but growing, of students and investigators coming to India from Britain and the other British dominions. For such students, as for Indian students going to Britain, some more organised guidance and assistance is needed than anything now open to them. In the comity of learning the scholar who wishes to study Sanskrit philosophy, Buddhist art, or Mogul architecture, for example, in the land of their birth, ought not to be compelled to recognise that no provision is made for him, that he is an unexpected guest for whom no arrangements have been made.

58. The universities of Britain are to-day feeling the need of some kind of mutual adjustment among themselves, both for the sake of their own students, and for the sake of the students of daughterlands who, after the war even more than before, will besiege their gates. For the first time in their history they have begun to take conference together, and to plan common action, because they realise the need of bringing themselves into more effective relations with the university systems of other parts of the Empire, and with the allied countries. The subject to which, hitherto, their deliberations have been mainly devoted, has been the provision of systematic guidance in the methods of independent investigation for students from other universities, the form which this guidance should take, the length of time which it ought to cover before the student is formally attested as having received it, and the form which the attestation should take, so that its meaning should be universally recognisable. They are in practical agree-

ment that over and above the undergraduate courses of set instruction attested by examination and leading to the traditional degrees, the British universities ought to provide courses of training of a quite different kind, courses of independent enquiry under direction, attested by the production of original work, and leading to a new kind of degree which should imply, not necessarily that the holder was himself a great researcher, but that he had been trained in the methods of research. This kind of degree, recognised throughout the Empire, as it is already recognised in America and Canada, might gradually become an all but indispensable equipment for serious university work.

59. But the kind of system here indicated cannot be set on foot except on two conditions. The first is that there should be some clear understanding as to the nature of the previous training and equipment which ought normally to be required before a student is admitted to these courses of training. And if such a system is to become common to the Empire, this implies that there should be some general understanding as to the purpose, significance and standards of the undergraduate courses in all the universities. The second condition is, that there should be an equally clear resolve that the meaning and value of the new kind of research degree shall not be degraded. For these purposes some common action, not merely among the universities of Britain, but among the universities of the Empire, would seem to be necessary. If the universities of India are to be enabled to participate in such common action, it can only be by the help of some central authority such as the Government of India ought to provide.

60. For some years past there has existed an organisation known as the Universities Bureau of the British Empire. Brought into existence as a result of the Universities' Conference of the Empire in 1911, it has rendered some useful services; it issues a year-book of the Universities of the Empire, and has played a valuable part in the recent conferences on post-graduate studies. It is as yet, however, a rather modest body, with no very clearly defined status or functions. It represents an idea and an aspiration rather than a fact. But this idea and this aspiration ought to be, and will be, realised more fully, either through this organisation or in some other way, if the commerce of ideas is to play, in the life of our commonwealth of nations, the part which it ought to play. We venture to suggest that it would be greatly to

the advantage of India, and not of India alone, if the Government of India were to co-operate, by subsidies and otherwise, with the Governments of other British Dominions in giving a real efficacy to some such organ of inter-university communication.

61. The value of such an organ may best be appreciated by considering how it would help to remove the confusion and misunderstanding which now exists as to the stages at which Indian students can with best advantage proceed to Britain for further study.[1] Some of them go to follow undergraduate courses. We regard this as being, though in some cases advantageous, in general undesirable, since India ought to be able to provide adequate undergraduate instruction within her own borders; we feel that so great a change in environment and in social usage cannot, as a rule, be profitably made by very young and immature boys; and we entertain the hope that one result of a scheme of university reform such as we have described in this report would be to render it unnecessary that Indian undergraduate students should resort in any large numbers to British universities. But we are far from suggesting or desiring that any forcible restriction should be placed upon the migration of students even in the undergraduate stage. At present, however, in spite of the attempts which have been made, both in England and in India, to provide him with organised guidance and advice, the student still finds difficulty in understanding the conditions under which he will be admitted to British universities, or the extent to which his Indian training will be recognised; because the practice of British universities varies widely, and follows no clear principle. A Universities Bureau, understanding the needs and conditions on both sides, ought to be able to give help in securing the acceptance of a general practice, or an agreement as to an approved standard, with such modifications as each university may think fit to introduce. Should our proposals regarding the intermediate courses be accepted, we would suggest that success at the examinations which will end these courses might reasonably be accepted, by every British university, as a condition of admission to the undergraduate course; and the termination of the intermediate course, as reconstructed, would in fact form a very suitable age and stage for transfer in those relatively few cases in which it may be desirable.

[1] See Chapter XXIX, where some account of the existing conditions is given.

62. Students, again, go in considerable numbers to Britain for professional and technical studies; more especially in law, where the qualification of a barrister, only to be obtained in England, has a high practical value. So far as law is concerned, we have elsewhere suggested that there are reasons for reconsidering the existing practice. In medicine, engineering and technical studies a clearer definition and a more uniform practice is necessary. Here also the new types of intermediate courses would form a very suitable preparation; and a bureau such as we have described might be able, not only to help in obtaining this definition and uniformity, but in making known to all Indian students, from time to time, by means of a clear statement in pamphlet form, what are the opportunities open to them, and on what conditions. Resort to Britain and elsewhere for professional and technical training will be affected by the increase of facilities for such training in India. But some students will always find it desirable to go abroad for this kind of work, and it is reasonable and healthy that they should do so. The suggested Bureau might make it easier for them to do so, by making plain the conditions on which they would be accepted.

63. It is, however, mainly for the purpose of advanced and independent work that Indian students should be encouraged to go to Britain. But here, above all, clear definition is necessary. The British universities cannot be expected to admit all-comers for training in the methods of research, which can only be successfully undertaken with limited numbers of highly qualified students. There ought to be a definition of the kind of qualifications demanded—so far as these can be expressed in definite terms. The ambitious young Indian scholar should have access to a clear description of the kind of opportunities open to him, the conditions under which he will be expected to work, the limitations placed upon the number of students who can be accepted at any centre of higher training, and the mode in which he should in each case apply for admission. This is a service that could scarcely be performed for him otherwise than by such a body as we have indicated.

64. We believe that it is at this stage, in post-graduate research work, that the best work can be done by Indian students going to Britain; and we look forward with hope to the time when there will be a steady stream of well trained and well qualified

young Indian graduates and young Indian professors, going to Britain and in a less degree to other English-speaking lands, for a period of training in the methods of research, and meeting at the great British centres students who have come for a similar purpose from all parts of the British Commonwealth. In bringing about such a result, Government must necessarily play a principal part. On the other hand we anticipate that in due time, when the Indian universities have been reorganised, and have developed great schools of learning particularly in those subjects which ought to be specially their own, there will be a counter-stream of British researchers, from all the nations of the Commonwealth, coming to take advantage of the revival of the ancient learning of India.

65. Nor is this the end of the interchange of scholars, and of the ideas which they represent, between the members of the Commonwealth. India needs not only permanent recruits from the West for the work of her universities—men who will spend the best parts of their working lives in their service. She needs these, and in larger numbers than ever. But she needs also visits by scholars of established position, whose lives have been devoted to the service of universities in other lands, and who will bring the stimulus of the ideas, traditions and methods of work with which they are familiar. The University of Calcutta has profited by the visits of such eminent scholars as Dr. H. E. Armstrong, Professor A. R. Forsyth, Dr. Arthur Schuster and Sir Paul Vinogradoff. The University of the Punjab has, during the last five years, had series of visits by a succession of 'cold-weather lecturers,' brought from university work in England for a season: the criticisms and suggestions, which they have been able to give, each in his own subject, have yielded good fruit. The frequent repetition of such visits is exceedingly costly, and diverts from the immediate work of the universities funds that can ill be spared. But is there any reason why there should not be interchanges of teachers, such as would be much less costly to arrange, not only between India and England, but between all the members of the British Commonwealth? The obstacle to such an arrangement to-day, in the case of India, lies in the fact that, under the existing system, the kind of work which Indian teachers have to do is largely such as the teachers of other universities would be very unwilling to undertake. But if the system

is changed, and if a sounder tradition of teaching methods is established, this obstacle would disappear; and, through the interchange of teachers, all the universities of the Empire would be brought in touch with one another, and enabled to learn from one another's methods.

66. It may appear that in the possibilities discussed in the foregoing paragraphs we have travelled far afield from the immediate subject of our enquiry. They are not remote or Utopian possibilities, but in some ways urgent, and capable of being realised, given good-will, in no long time, and with no great expenditure of money. But just as we found that the problem of reorganising the University of Calcutta could not be seriously discussed without an analysis of the system of secondary education upon which it rests, or solved without a reorganisation of that system; just as we found that the university system could not be reformed without changing its relations with the administrative system; just as we realised that the university problem in Bengal could not be dealt with in a water-tight compartment, but involved the consideration of Indian university conditions as a whole; so we have felt that the system of university training in India, deeply affected as it is, and always has been, by the movements of thought and the methods of teaching and study prevalent in Britain, cannot be adequately reconstituted unless those who are responsible for its reconstitution hold in mind the whole organised movement of ideas, the whole organisation of learning and study, in the great complex of varied nations of which India is a part. Ultimately, like all educational problems, ours is a political problem, and among the highest of political problems; and being called upon to discuss the university system of Bengal at a time when the political system of India is being reshaped, and when the unification of the British Commonwealth has been forced into the forefront by the pressure of world-events, we have felt that we could not deal adequately with our theme unless we envisaged it in the light of these momentous happenings; and drew inspiration from the thought of the beneficent results which might flow from the conception of the Commonwealth of Nations as being also a Commonwealth of ideas and of learning.

CHAPTER LI.

Financial Aspects of our Proposals.

I.—General observations.

1. We have put forward, in the foregoing chapters, a scheme of reform and reorganisation so far-reaching as to amount to a complete reconstruction of the whole system of secondary and university education in Bengal. This scheme, if it is adopted, cannot be carried out in a moment. It is a programme of action, which, under the most favourable circumstances, must extend over a number of years. Its ultimate success depends upon the enlistment and the training of an adequate teaching-force, which must be a slow business. The scheme not only can, but must, be wrought out gradually and in parts, though the parts will only be effectively organised if the needs of the whole are continually kept in view. But in whatever order and by whatever methods this scheme of reform is brought into effect, it must involve a large expenditure of money, and an expenditure which must increase as the system developes and the needs of the community grow. It is impossible to give precise estimates of the cost of a programme so far-reaching and so elastic. Yet some idea of the cost of its parts must be attempted.

2. Although our reference bids us primarily to consider the needs of the system of university training, we have found it impossible to consider this problem without at the same time taking into account the needs of secondary education, and especially of that higher branch of it—the intermediate stage—which is at present carried on by university institutions. And this inevitable enlargement of our purview brings us up against a problem of great difficulty : the problem of the relative emphasis that ought to be laid upon, and the relative scale of expenditure which Government and the people ought to be urged to undertake in regard to these two branches of the educational system ; nor is it possible to ignore the fact that the development of the system of primary education will necessarily involve an immense and an increasing

expenditure. We should fail in our duty if, in putting forward claims on behalf of university education, we did not also hold in view the not less important claims of the other educational grades upon the resources available for educational purposes.

3. It has often been urged that the expenditure upon university education in Bengal, relatively to that upon secondary and (still more) primary education, is excessively high, though in itself insufficient. And undoubtedly it is true that the proportion of the number of university students to the number of school pupils is much higher in Bengal than in other countries: the educational pyramid, though still a pyramid, has a narrower basis and a broader apex than elsewhere. The tendency of an enlightened policy in the future must be to change this state of things, not by whittling away the apex, but by broadening the base; an ever greater proportion of the public funds available for education will inevitably be devoted to the lower grades. But if this inevitable development of the future were used as an argument against any further expenditure at this stage at the university level, the contention would be illegitimate. It may be an unfortunate thing that the system should have been allowed to grow on such disproportionate lines. But it *has* so grown. The result is that in Bengal a vast number of university students are receiving a kind of education which is inadequate and in some cases deleterious. From among them come the teachers of the schools; and the outlook and methods of thought imbued in them by their training exert through them an influence upon the mind of the community and upon its educational ideals. Just as it is essential for the reform of the university system that the schools should be reformed, so it is equally essential for the reform of the schools that the university system should be reformed. Neither the one reform nor the other can be effected without large expenditure. Neither the one reform nor the other can be attempted with any hope of success if it is attempted in isolation. An adequate reform of the university system, with the expenditure of the funds necessary for this purpose, is therefore essential not merely for its own sake, and not merely for the advancement of learning, but also as a necessary means to the improvement of the school system, and to safeguard the intellectual and social welfare of the country.

4. It may be well to begin by analysing, in general terms, the sources from which the necessary outlay, whether for schools or for universities, can be met, and the extent to which they are utilised in Bengal. The cost of working an educational system can be met, and is always met, by a combination of two or more of five methods. The first—which scarcely deserves to be called a 'method,' since it is self-defeating in its results—is that of making the teachers pay, by keeping their salaries at the irreducible minimum, and by overworking them so that they have little or no leisure for reading or thinking. The second is that of making the pupils or their parents pay, by charging substantial fees. The third is that of making the whole community pay, by depending upon Government grants, which can, of course, only be provided out of taxation. The fourth is that of depending upon ancient endowments, inherited from the past. The fifth is that of trusting to the benevolence of rich and public-spirited men. All these methods have been employed in Bengal, but mainly the first three.

5. The vices of the existing educational system in Bengal arise very largely from the extent to which the burden has been imposed upon the teachers. This is the most disastrous of all expedients. Except when it is able to appeal to a widely diffused missionary spirit, which is always rare, and which is discouraged by the deadly mechanical methods and the narrow aims of the existing system, its only result must be to produce inefficiency, to deter able men from adopting one of the noblest of careers, to lead to negligent and half-hearted work, and to cause discontent and embitterment, which easily extends itself from the teachers to their pupils. The salvation of Bengal depends upon the abandonment of this method; depends, that is, upon the payment of adequate salaries to the teachers in institutions of all grades. These salaries should bear a reasonable relation to the cost of living and to the standards of comfort characteristic of the educated classes of the community. These are, in Bengal, modest enough in themselves. But social usage imposes upon the teacher burdens which are relatively far heavier than those which his congeners in the West usually have to bear. He must marry young, and usually starts upon his career with a wife and children already dependent upon him; and having thus given hostages to fortune, he no longer enjoys full freedom to shape his own course, or to resist unfair treatment. Not only that, but he has commonly to assume the burden of main-

taining, wholly or in part, members of his family, which among the Hindus comprehends other than the nearest relations; and the higher his pay, the more exacting this demand becomes. The *bhadralok* classes hold aloof (in the main) from non-literary callings; literary callings are too few and too ill-paid to support them all; but because the claims of the joint-family are insistent, the man who has the credentials necessary for admission to a literary calling is expected to be able to carry on his back a heavy load of family obligations. On any view the scale of payment for teachers, even in Government schools, and still more in many private schools, is wholly inadequate, and must be greatly increased. But the full advantage will not be reaped from this reform unless and until it is assisted by an increase in the number of callings to which the educated classes resort.

6. The major part of the cost of the existing system is met by the fees of school boys and college students, which provide 56·8 per cent. of the total expenditure in the colleges, and a much higher proportion in the schools.[1] Yet the fees charged in Bengal are small. At the most expensive of the colleges—Presidency College—they are only 12 rupees *per mensem*, or about £10 *per annum*; the normal fee is 5 rupees *per mensem*, or £4 *per annum*; and the cost of a school education varies from 2 to 4 rupees *per mensem*, or from rather more than £1-10-0 to rather more than £3 *per annum*. It is manifestly impossible to provide a good university education at a cost of £4 a head, or even £10 a head, or a good school education at £2 or £3 a head. Yet this is being attempted in most of the schools, and in many of the colleges; inevitably with unhappy results. One of these results is to intensify the unhealthy concentration upon purely literary careers, since a literary course (of a sort) can be provided more cheaply than a scientific or a practical course. Is it possible to increase the fees paid by students? Many parents in Bengal send their sons to England for a part or the whole of their education and cheerfully pay £200 or £300 a year. Parents of this class could undoubtedly pay much higher fees than they now do. But they are a minute

[1] It is impossible to say what this proportion is, because no exact figures are available regarding the contributions towards the cost of private schools which come from subscriptions and other sources. Private beneficence to the schools generally takes the form of providing a building. Many schools in the towns pay their way on fees; some even yield a profit.

minority of the *bhadralok* classes. Very large numbers of parents pay large sums for tutorial coaching for their boys—often much more than they pay in school fees. If the school course were made efficient enough to render such coaching unnecessary, these parents would be able to pay substantially higher fees, and still save money. From time to time the University, the Government and the private colleges have increased their fees; no difficulty has been felt; the number of students has continued to increase; and there has been little or no protest. It would appear, then, that in some institutions at least, a higher rate of fees than that which now rules is not impossible, provided that it is balanced by a liberal and judicious system of scholarships for the assistance of poor boys of ability. It has been suggested that while the fees might be kept very low for students who had done well in the admission examination—who had, for example, obtained a first class or marks of distinction either in the high school examination or at the intermediate stage—a higher fee might be charged for those who had not done so well; and it is argued that this would reduce the numbers of those weaker students who constitute the greatest difficulty of the teacher, and who would be, in most cases, better advised to pursue another kind of career. This would be a legitimate method if all the schools were well organised; until that is so, it would penalise the boy whom circumstances have compelled to attend a bad school. The suggestion deserves consideration. But it must be recognised that the Bengali student is usually poor; that he seldom has money even to buy a few books; and that any substantial increase of fees would in most cases tell hardly upon him.

17. There are but few old endowments in Bengal which are devoted, wholly or in part, to the maintenance of institutions for modern education. The most important is the Mohsin Fund, of which a full account is given in the appendix volume. It has contributed notably to the encouragement of education among Musalmans. As compared with western countries, Bengal suffers seriously from the lack of endowments of this type. But we attach importance to the statement made to us in evidence by Mr. Surendranath Banerjea[1] that there are many old foundations, intended originally for religious and charitable purposes, but at present largely wasted,

[1] General Memoranda, page 492.

which might justly and appropriately be devoted to meeting the great educational needs of to-day. We have not ourselves been able to make any enquiry into this subject. But if such funds exist, and can be fairly devoted to such purposes, they might very materially contribute to ease the situation.

8. There has been some recognition on the part of rich men in Bengal of their responsibilities in regard to the education of their poorer fellow-citizens. Many schools have been built by zamindars. Some colleges enjoy modest endowments. The University has, within the last few years, attracted substantial benefactions for its higher work. But on the whole the contribution to the cost of the educational system which comes from this source is small. Only 8·8 *per cent.* of the cost of maintenance of the University and its colleges is derived from endowments and subscriptions; in the schools the proportion must be less, though it is impossible to obtain any exact figures on this head. Upon an increase of aid from this source the prospects of hope for the future must largely rest.

9. It is from Government—that is to say, from the taxation of the community—that the largest proportion of the existing outlay (next to fees) is drawn. Government defrays 39 *per cent.* of the cost of university and college education in Bengal; and a much smaller proportion of the total cost of school education. Whatever may be the future contribution of the private benefactor, and we hope it will be substantial, the main burden of establishing a new and healthier system must be borne by the taxpayer. Government will have to pay a larger proportion of a substantially larger expenditure, if the evils we have described are to be amended, and the reforms we have advocated are to be carried through. On all hands, during our travels in Bengal, we have heard the demand that Government should give more for education. Often enough those who make this legitimate claim seem to figure Government as sitting upon a huge and inexhaustible treasure-chest, from which it dispenses niggardly bounty, and they seem to imagine that it is greater 'generosity' on the part of Government which is required. But if Bengal is to have a better system of education, Bengal must pay for it, and only Bengal can pay for it; and what Government has to show is not 'generosity,' but courage in levying the necessary taxation; a courage not to be expected until it is plain that

those who will have to pay the taxes are ready to do so. Either in the form of fees, or in the form of gifts, or in the form of taxes, Bengal must pay more if it wishes to escape from the vicious circle of its present education, and to give to its youth a training which will fit them more adequately to play their part in the world.

10. It is no part of our duty to suggest how the money is to be found. But it is part of our duty to show that reform can only be had by paying for it, and to indicate in outline how much it will cost. It is part of our duty, also, to recognise that in the conditions now existing in Bengal, the raising of the necessary funds must present difficulties; and therefore to emphasise clearly those parts of the scheme of reform which are most urgently needed.

II.—Secondary and intermediate education.

11. The foundation of reform will lie in a reconstruction of the system of secondary education. But that in its turn depends upon the possibility of producing a sufficiency of competent teachers, in which the co-operation of the University is essential. It depends also and primarily, upon the possibility of establishing something like a co-ordinated system, such as does not now exist; under the direction of a body capable of taking into review the needs of the country as a whole, from many different standpoints, and of adjusting curricula, and distributing public funds, in relation to these needs. Hence the first demand is for the administrative cost of establishing a Board of Secondary and Intermediate Education such as is described in Chapter XXXI. This involves (1) the salaries of a president (who must be a man of wide educational experience and great administrative ability) and of a secretary; (2) the cost of a very substantially increased staff of visiting examiners and inspectors; the existing staff being insufficient to deal adequately even with Government schools alone; (3) the cost of working the two examinations, at the high school and the intermediate stages; (4) a substantial increase of office staff, which must be necessary whatever may be the relations between the Board and the Department of Public Instruction. A large part of these new charges would be covered by the fees paid by examination candidates. But the methods of examination which we have recommended in the case of the intermediate colleges and of some high schools will obviously be much more costly than the existing methods. We

do not venture to make any exact estimate of the additional administrative charges that will be necessitated by the establishment of the Board. But it would be a mistake to pare down these charges too strictly. Whatever their amount may be, these charges must obviously fall wholly upon Government.

12. One of the main tasks of the Board, when constituted, will be to improve the quality of the work done in the high schools. This will obviously be an immense and very costly business. Very many of the schools need new buildings and in some cases hostels and playgrounds. Almost all need a much higher salary scale for their teachers, with reasonable security of tenure and superannuation allowances. It has been estimated that (apart from initial capital expenditure) a fairly efficient secondary school education, under such conditions as exist in Bengal, could be provided for Rs. 60 (£4) a head *per annum*. This is a modest enough figure. But not more than half of it can, on the average, be met by pupils' fees; leaving a *net* sum of about Rs. 30 or £ 2 *per annum* for every pupil to be met from other sources. There are about 378,000 boys now receiving English secondary education in Bengal. The cost to the community of making their education reasonably efficient would thus be about Rs. 113 lakhs, or roughly £ 752,000 annually. But the number of pupils desiring secondary education is increasing by leaps and bounds every year. Moreover, the figure quoted above makes no allowance for the education of girls, which is only beginning, and which must be relatively more costly than that of boys, because the girls have to be taught, at present, in smaller groups and under more expensive conditions. If the system of secondary education in Bengal is to be made thoroughly efficient, an annual expenditure, over and above fees, of not less than Rs. 150 lakhs will have to be undertaken in the future.

13. In view of the fact that the immense burden of primary education still remains to be dealt with, we do not think it is conceivable or practicable that the whole of this very great expenditure upon the secondary stage should be suddenly imposed upon the taxpayers, or should be entirely borne by them. Local effort and private generosity must be enlisted to help to meet the need, but it is impossible to predict how far this will be feasible. The Education Commission of 1882 hoped for such results; their expectations have been, in the main, disappointed. In England, quite apart from numerous private benefactions, a large proportion

of the cost of education is borne by local rates assessed upon the basis of house rent, and often reaching a very high figure. This system has the advantage that the ratepayer, when he pays his 'education rate,' knows that he is contributing directly to the training of the community and to its increased efficiency. There is practically no analogy to this in Bengal. Therefore we do not suggest an immediate or a very early expenditure on the scale indicated in the foregoing paragraph. The programme of reform must be carried out gradually—if for no other reason, because reform will be ineffective unless a large body of better-trained teachers can be introduced into the schools; this, indeed, is the most costly part of the programme, and it can only be carried out by degrees. Even as things are, real improvements might be brought about by judicious changes in the curriculum, by helpful supervision and advice, and by a reduction in the emphasis laid upon mere examination success. But far more than this is necessary, even from the outset. Sufficient funds should be available to make it possible to give grants-in-aid to all the existing schools, and to set on foot a superannuation scheme for teachers. We hope that the influence of such a Board as we advocate would stimulate private and local effort, but it can only do so if it is in a position to come to their aid. In any case, therefore, the burden upon the taxpayer must be from the outset substantially increased. We do not venture even to attempt an estimate of the amount which should immediately be set apart for these purposes. All that can be spared from other public needs can be advantageously employed; and it must be for Government to determine how much it can fairly demand from the taxpayer for this purpose without disregarding the needs of other branches of education.

14. When we pass to the cost of the proposed new educational grade of intermediate colleges or higher secondary schools, we are on more definite ground; for here, just because we are dealing with a new grade, a nearer approximation to an exact estimate is possible. We cannot too strongly emphasise our conviction that the creation of a series of efficient intermediate colleges in every part of Bengal constitutes the most valuable reform which can be undertaken at this juncture. It is, in our judgment, the most urgent of the reforms we have proposed; and it should be undertaken at once. It constitutes the best strategic

point of attack upon the evils of the present system; owing to the influence which the new institutions can exert upon the other educational grades, and also upon the educational outlook and the economic development of the country at large. Most of the intermediate colleges will be worked in close connexion with the higher classes of selected high schools, which will share the benefits of more efficient teaching. New teaching methods, introduced in these institutions, will exercise their influence in neighbouring schools. The intermediate colleges will train a new generation of teachers, through whom their influence will be felt upon the lower classes of the high schools, and upon many of the middle schools. They will direct the attention of their pupils to the possibility of other careers besides the clerical, provide them with suitable training, and thus supply recruits for the agriculture, industry and commerce of the country. They will supply the universities with far better equipped students, and relieve them of the burden of dealing with great masses of students unready for university methods of work. In saying all this we repeat many arguments earlier advanced. We repeat them because we feel that it would be the falsest of false economy not to do everything possible to find the means for carrying out this new development at the earliest possible moment, and in a thoroughly efficient way.

15. We have already, in Chapter XXXII, given a very rough estimate of the cost of working an intermediate college. This estimate made no allowance for the variety of size and type, and therefore the varying degree of expense, in various colleges; nor did it attempt to make any allowance for the number of high school boys in those intermediate colleges which would be attached to high schools. It endeavoured only to imagine a self-contained intermediate college, more or less *in vacuo*. In an appendix will be found a much more detailed estimate, based upon a close review of the actual demand for education of this stage, as shown by the latest available figures, and upon a forecast of the size and type of intermediate college which would probably be necessary in the different parts of Bengal. It assumes that in the great majority of cases the colleges would be attached to, and worked in connexion with, a high school; and it allows for only nine self-contained intermediate colleges. In the latter alone, it is assumed, would the wide variety of courses described in Chapter XXXII be fully

available; the majority of colleges would provide a smaller variety of courses. On the basis of these assumptions, and of the further assumptions that a uniform fee of 5 rupees *per mensem* would be charged in the intermediate classes, and that 10 *per cent.* of the students would enjoy free places, and another 10 *per cent.* pay only half-fees, the estimate shows a *net* cost (after deducting fees) of more than 20 lakhs *per annum* for 39 intermediate colleges. This corresponds nearly enough to the rough estimate of half a lakh per college at which we arrived in Chapter XXXII. In these estimates provision is made for the cost of maintaining residential accommodation for about one-half of the total number of students in each college. From the expenditure estimated above, some substantial deductions have to be made, on account of the existing cost of the students now reading in the intermediate classes of Government and aided colleges and of the school boys in the higher classes of those Government schools to which the colleges would be attached. It is difficult to compute how great a deduction should be made on these grounds; and still more difficult to say how much of the cost might be expected to be borne by the authorities of private and missionary colleges. On the other hand, no allowance is made for contributions to a superannuation fund, which should be computed on the basis of 10 *per cent.* of the salaries, though this amount might vary in various institutions and with various grades of teachers. But the cost of the existing pension scheme would have to be allowed for in determining the new outlay thus involved. It would, therefore, seem to be unsafe to assume that the full system could be worked at a less cost to the State than about from 15 to 20 lakhs *per annum* of new money.

16. It is obvious that the system as a whole could only gradually be brought into operation on the full scale: probably, under the most favourable circumstances, it would take about five years to bring it into full working order; only gradually, therefore, would the full scale of expenditure be attained. But from the outset there would necessarily be large demands for capital outlay, for buildings and ground, for laboratories, hostels and playing fields. It is not possible for us to give an estimate of the outlay which would be thus involved. We cannot tell how far existing college and school buildings could be utilised; the cost of land varies from district to district; the cost of buildings varies with the simplicity of the style adopted. We hope that in mufassal centres

spacious sites might be secured, on which buildings of the greatest simplicity consistent with ultimate economy would be erected; and that in Calcutta a style of building designed to secure the utmost economy of space would be adopted. How much the whole series of institutions would cost, only the Board, after an exhaustive survey, could determine.

17. We suggest that an enterprise of this character, which should be carried through rapidly and on a large scale, would best be financed by a special loan, to be repaid by means of a sinking fund within a period of twenty-five or thirty years. The great and urgent importance of providing Bengal with the buildings required for a new and improved system of higher secondary education, which will be of immediate benefit to the economic interests of the people, justifies expenditure upon a scale involving repayment spread over a period of years, during which successive generations will profit by the new facilities of training. The raising of a loan for this special purpose would direct public attention, both in Bengal and elsewhere, to the importance attached by the Government and by public opinion to the improvement of education. And the provision at one blow of the capital required for this extensive operation, all the parts of which should be undertaken without delay, would allow the new undertaking to be carried out upon a well-considered and systematic plan, without the hesitations, delays and other interruptions incidental to a piecemeal policy.

18. It is an essential part of our proposals for the reorganisation of secondary and intermediate education that a 'special corps' of western-trained teachers should be enlisted; including especially teachers of English, of education and of some of the sciences. The salary scale of these teachers should not, we suggest, be rigidly fixed; the Government, at the request of the Board, should be free to make special arrangements in individual cases. It is important that this 'special corps' should be engaged and set to work at the earliest possible date; and it ought, from the first, to include a number of women. Perhaps 60 to 70 of these western-trained recruits, familiar with western methods of school-teaching, might be required from an early date. If their salaries be averaged at Rs. 500 *per mensem*, with an allowance of another Rs. 100 to cover pension charges or other allowances, the cost would be about 4½ lakhs which is included in the 15 to 20 lakhs named above. The

members of such a corps would be specially useful in serving as visiting examiners.

19. Taking into review the whole of these requirements for the adequate performance of the work of the Board of Secondary and Intermediate Education, we do not think it would be wise or practicable to allow for this work a less sum than Rs. 40 lakhs *per annum* of new expenditure in addition to the sums already spent on such work and the revenue from examinations. This very rough allotment is meant to cover (1) administrative expenses of the Board; (2) grants for the gradual improvement of the high English schools, and the initiation of a system of superannuation for their teachers; (3) the maintenance of the required number of intermediate colleges with teachers paid from the first on an adequate scale and enjoying superannuation allowances; (4) interest and sinking fund on the capital expenditure necessary to provide new buildings, etc; and (5) the cost of maintaining a corps of western-trained teachers, available for service both in Government and in private schools and colleges. This outlay would, indeed, be a modest one, considering the magnitude and importance of the reforms it was intended to render possible. We hope that it would be largely supplemented by contributions from corporate and private sources.

III.—Dacca University.

20. When the original scheme for the University of Dacca was drawn up, careful and detailed estimates of its cost, both capital and recurring, were included in the Committee's report. These estimates provided for a capital expenditure of almost 53 lakhs, and for a recurring annual outlay of almost 13 lakhs. But no allowance was made for one very substantial item in the annual expenditure: the charge for pensions to the teaching staff. As the staff was intended mainly to consist of members of the educational services, whose pension rates are fixed by rule, this extra charge was easily calculable. Nor was a figure named for the cost of repairs and renewals, which, according to the established usage, would be met by the Public Works Department. And, finally, as the original estimates provided only for the scheme as defined in the report, and not for any expansions which would be required by an increase in the number of students, or by the development of

new subjects of study; and as, under the scheme, Government was to assume full and direct responsibility for the financial support of the University, Government was necessarily left with an undefined liability, bound to become more heavy as time passed; especially since a university, organised on the basis proposed, could scarcely expect to attract benefactions from the public, who would be apt to feel that any funds which they supplied would only lead to a lightening of the demands made on Government.

21. The substantially modified scheme for the new University of Dacca which we have described in Chapter XXXIII involves a marked departure from the financial system proposed in the original report. We propose, in the first place, that instead of assuming a general liability for the maintenance of the University in an efficient condition, Government should make a stated annual grant to the University, and throw upon the authorities of the University the responsibility for making the best use of these funds, and for supplementing them, to the maximum possible extent, by appeals to private benevolence. The amount of the grant should, in the first instance, be fixed at a sum which would be enough to secure efficiency, and it should only be increased as a result of special application, for good reason shown, and after due consideration by Government of all rival claims upon the funds available for educational purposes. The estimates which we set out below are designed merely as a means of arriving at a reasonable figure for the annual grant; they are based upon more detailed computations which will be found in an appendix. It is not our intention to suggest that Government should in detail earmark the grants which it makes in accordance with the figures we have set down for purposes of computation. The grant might, perhaps, be divided into broad heads, such as staff, maintenance, residential provision and administration; but within these heads the utmost freedom, and the fullest responsibility, should be thrown upon the authorities of the University.

22. In the second place, the separate treatment of students in the intermediate stage which is a central feature of our proposals, will in various ways modify the financial provision necessary to be made. In particular, it renders possible the abandonment of the collegiate organisation of undergraduate teaching, in recommending which the Dacca Committee were largely influenced by the needs of intermediate students. The centralisation of university teaching under departments of study headed by a

professor or reader will involve not only increased efficiency but some economy; and in particular it becomes unnecessary to provide a number of large and elaborate college buildings, each with its full tale of class rooms, etc. The estimates of capital expenditure will be correspondingly reduced. Under these circumstances it would be fair to charge part or the whole of the capital cost of two or three intermediate colleges in the Dacca district against the capital sums allocated under the Dacca scheme, and in order that the University of Dacca should be established on its new footing with the least possible delay, we recommend that at least two colleges for the accommodation of intermediate students should be at once instituted in Dacca. Even should the establishment of the intermediate system be for any reason delayed, this should be at once undertaken, the colleges thus founded being placed for a time, if necessary, under the control of the Dacca University authorities.

23. Finally, we propose that the staff of the new University, instead of being arranged under the fixed graded services, should be appointed to individual posts, on special contracts made in each case, giving (in all superior appointments) as great security of tenure as the service system allows, but permitting of greater elasticity and variation. While we have suggested that minimum salaries should be fixed for professorships, readerships and lectureships, we do not suggest that these minima should represent even the normal commencing salaries, but only the lowest figure on which these titles should be conferred. We assume that there would be considerable variation in the actual salaries of various posts of the same general rank, the salary depending in part upon the standing and experience of the person appointed. Under this scheme there would be no such fixed and definitely calculable salary scales as the service system provides. But we have based our calculations upon an assumed average salary of Rs. 850 for professors (heads of main departments), and smaller averages for the lower grades. At the same time we have allowed for a number of posts in connexion with the control and supervision of residential halls; and as these would, under our scheme, always be held by teachers, the possibility of obtaining them would be among the inducements for accepting a teaching post in the University. In the first instance the staff would, of course, mainly be drawn from the existing members of the services. They would be appointed

either by a special arrangement in each case, whereby they would cease to be members of the services, and become officers of the University on the terms of a defined contract backed by a Government guarantee; or they might remain members of the services, on temporary or permanent loan, the whole of the charges of their pay and pensions being undertaken by the University. Future appointments would be made directly to posts in the University, in the manner defined in Chapter XXXIII.

24. The capital outlay necessary for starting the University (apart from the intermediate colleges) on the basis of our proposals would obviously be much less than the outlay proposed under the original scheme. In our opinion, a start should be made with the existing buildings together with (i) a new physical laboratory, (ii) three or four halls of residence, (iii) a practising school and a demonstration school, (iv) a sufficient number of houses for the accommodation of the teaching staff to be erected on the Ramna, and (v) a lakh of rupees for the purchase of books for the library. Further details will be found in Chapter XXXIII, paragraph 228. In view of the great fluctuation caused by the war in the cost of building and the complexity of the estimates already prepared, we have not framed estimates under these heads. It should be added that an additional sum will be required to fit up Government House for the purposes for which we propose it should be used—those of a library with seminar rooms, and of university offices; a professors' club might also find accommodation here for a time.

25. With these explanations, we may proceed to summarise the main heads of expenditure which ought in our judgment to be taken into account in estimating the amount of the annual grant which should be made if the University is to be efficiently run.

26. The main item consists of the salaries of the teaching staff. We have provided for fourteen professors, each in responsible charge of an important department of study; besides estimating their salaries at an average of Rs. 850 *per mensem*, we have allowed an additional sum of Rs. 3,000 *per mensem* to meet cases in which a substantially higher salary may have to be paid. We have provided for 23 readers with an average monthly salary of Rs. 533: some of these would be in charge of minor subjects, others in subordinate charge of branches of large subjects. Besides these we have

estimated for 38 lecturers and 25 assistants and demonstrators. This would be a quite adequate staff to conduct the work of the seventeen main departments of study with which we propose that the University should start. One of the posts of professorial rank is allotted to a Director of Physical Instruction. Assuming that there are 1,500 students, this would give an average of one teacher to every fifteen students, which is ample. Should the number of students greatly increase, an increase in the number of teachers would become necessary; but unless the number of subjects was increased, this would be mainly in the lower grades, and would be largely met by the increase in fees.[1] On the other hand, there are several departments of study which it would be desirable to establish for which we have not suggested that immediate provision should be made: notably geology, physiology, medicine, agriculture and civil engineering. The gross total cost of the teaching staff as we have estimated it would be Rs. 43,069 *per mensem*, or less than £35,000 *per annum*. To this total we add allowances for members of the teaching staff residing in halls of residence or engaged in other administrative work, amounting to Rs. 3,800 *per mensem*, or a little over £1,000 *per annum*. This would give an average annual salary, for the whole staff of about £360. It is possible that a wise administration may be able to achieve the result desired at a less cost. But it would be dangerous, on the mere chance, to run the risk of starting the University on an inadequate basis. If economies are possible without loss of efficiency, the balance can be spent in an expansion of the range of studies or an improvement of material.

27. For administrative expenses we estimate that a monthly expenditure of Rs. 10,000 should be provided for. The principal item in this estimate is the salary of the Vice-Chancellor, for which we have allotted Rs. 4,000 *per mensem*. It is essential for the proper establishment of the University that this office should be filled by a man of the highest standing. For the subordinate staff of the laboratories (mechanics, etc.), and for the menial staff we have allowed about 3,000 rupees *per mensem*; for other annual expenditure, notably the library (on which money should not be stinted),

[1] An estimate of the extra cost of providing 500 additional students is given in the volume of appendices to this report. Mr. Ramsay Muir desires to record his belief that this additional estimate is in some respects too high.

laboratory expenses, scholarships and allowances, travelling allowances, water, drainage and electric supply, we have allowed over 1½ lakhs *per annum* : the details of these estimates will be found in the appendix. Finally, we estimate that the gross cost of running a good practising school for 300 boys would be about Rs. 26,000, of which about Rs. 10,000 might be recoverable in fees.

28. The total outlay thus provided for would amount to rather more than nine lakhs *per annum*. This we believe to be a fair estimate of the cost at which a university planned on the lines we have described, and providing for 1,500 post-intermediate students, can be run efficiently. But in order to determine the *net* new cost to Government, it would be necessary to deduct (1) the income from students' fees and from fees in the practising school, and (2) the sums which Government is now expending on the Dacca and Jagannath Colleges, and on scholarships for boys in these colleges.[1] After making these deductions, we find that the *net* additional annual cost of working the Dacca University on the scale and plan we have recommended would be about 6 lakhs.

29. There remain two important items of expenditure not as yet included. Some allowance must be made for pensions or their equivalent; and for the cost of repairs and maintenance of buildings. Neither of these items was included in the original estimates of the Dacca Committee: the first was omitted because practically the whole staff came under the service pension system; the second because the cost of repairs was left to be met by the Public Works Department. If, therefore, items under these heads form an addition to our estimates, they must also be added to the original estimates. Moreover, under both heads a considerable expenditure is now undertaken by Government on account of the Dacca College, the Training College, and the existing buildings on the Ramna site; to the extent of these sums (whose amount we do not know) whatever is allowed for will not be new expenditure.

30. We recommend, in regard to pensions, that pension charges of existing members of the services who are lent to the University should be debited to the University, the grant being correspondingly increased; that existing members of the services who transfer

[1] See our volume of appendices to this report where the details are given.

definitely to the service of the University should if possible be given the option of either maintaining their existing pension rights, or of exchanging them for participation in a superannuation fund on terms to be arranged; and that all persons appointed to superior posts in the University henceforward should be required to take part in a contributory superannuation system. We do not think that this system need necessarily be made to cover junior posts held on short terms; and special arrangements might have to be made for some senior posts filled for short periods. But in general we recommend that teachers should annually contribute 5 *per cent.* of their salaries; that the University should contribute at least 10 *per cent.*; that the contributor should be allowed to withdraw his own contributions with interest if he should retire from the service of the University before a fixed date; and that a period of years should be fixed for the maturation of the fund in each case. We do not feel that we are in a position to make any estimate of the cost of working such a scheme, or to compare this with the cost of a pension system on the present basis. The computation should be made actuarially. But we believe the scheme we propose would not be more expensive than the scheme of the Dacca Committee and would be more attractive, inasmuch as it would open the possibility of a ready transfer without financial loss, should occasion arise, from the service of the University to that of another university, possibly in some other part of the Empire. We recommend that a sum sufficient to work a superannuation scheme on this basis should be added to the annual grant of Dacca University. The University should be required to show, in its annual financial statement, that the fund is administered on actuarially sound lines; and should be prohibited from making fresh appointments on special terms without ensuring an adequate contribution to the fund.

31. In the same way we recommend that an estimate should be made of the sum necessary to keep the existing and future buildings in a state of adequate repair, and that an equivalent sum should be added to the annual grant, the responsibility for keeping the buildings in sound repair being thrown upon the University. It should be noted that in our estimates no reference is made (*a*) to the room-rent of students in the halls of residence, or (*b*), to the rent of the houses for the staff which will have to be erected. The former should cover the cost of maintenance of the students'

own quarters; the latter should contribute substantially not only to the upkeep of the teachers' houses themselves, but to the general maintenance charges of the University buildings. It would probably be wise to leave to the University the business of collecting rents, and to count these as part of its revenues.

32. While we cannot name a figure for the last two items, it would appear that an annual grant of perhaps 7 lakhs ought to be sufficient to give the University of Dacca a good start;[1] all income from fees and other sources being also collected and expended by the University. We strongly urge that the responsibility of making the best use of the available funds, of adjusting its activities to its resources, and of endeavouring to supplement them by tapping new sources of revenue and obtaining benefactions from the public, is a responsibility which ought to be definitely imposed upon the executive authorities of the University, subject always to a precise annual audit; we are convinced that the assumption of this responsibility will contribute in a great degree to invigorate the University, to increase the corporate spirit of its members, and to strengthen its grounds of appeal to the community which it serves.

IV.—The Teaching University of Calcutta.

33. It is much more difficult to make a working estimate of the outlay necessary for bringing a teaching university in Calcutta into efficient working than to make an estimate of the cost of a new university at Dacca. The existing organisation is so vast and so complex, and the finance of the University and its colleges so confused and difficult to disentagle; the numbers to be dealt with are so immense; the possibilities of fruitful expansion are so varied and alluring; the number of variables in the problem is

[1] The annual expenditure, excluding non-recurring items, on the University of Mysore (the nearest analogue in India to what we propose for Dacca) was Rs. 3,25,094 in the year 1917-18. This was spent in giving university education to 614 students (this excludes the graduate and engineering courses) or to about one-third of the number proposed for Dacca. The annual cost of educating each student at Mysore University was, exclusive of the outlay on buildings, Rs. 529, or more than £35; or, if 5 per cent. on the capital outlay is included, Rs. 541 (more than £36). The part of the annual expenditure of the University of Mysore which goes on the salaries and pensions of the teaching staff is a little more than $\frac{2}{3}$ths of the total expenditure. For these particulars we are indebted to Mr. Thomas Denham, Registrar of the University.

so large, that over a great part of the field only a very rough approximation is possible.

34. Three distinct aspects of the enquiry must be simultaneously kept in mind:—(*i*) the patent and obvious defects of the existing system, and the extent to which increased financial resources are necessary to remedy them, even if the initiation of the scheme of reform we have proposed were for any reason to be delayed; (*ii*) the expenditure necessary for the purpose of making practicable the new methods of university teaching and organisation defined in Chapters XXXIV and XXXVII, the extent to which these will involve immediate or cumulative outlay, and the relation between them and the requirements under (*i*); (*iii*) the expenditure desirable for the purpose of providing Calcutta University with the equipment necessary to meet all the demands of the modern world, and to place it on a level with the greater universities of the world. And from these three points of view it will be convenient to deal in turn with (*a*) needs of administration, (*b*) the requirements of the colleges, and (*c*) the requirements of the central teaching organisation of the University. In discussing these needs it will be convenient to fix our attention primarily upon the Teaching University of Calcutta, leaving the mufassal colleges for subsequent treatment.

35. *Administration.*—The administrative machinery of the University[1] is gravely over-strained. A substantial expenditure is necessary to secure due efficiency. For this purpose it is necessary in the first place that there should be a whole-time and salaried Vice-Chancellor. We recommend that his salary should be fixed at Rs. 4,000 *per mensem*, that a contribution towards his retiring allowance should be made at the rate of 5 per cent., and that, in view of the exacting nature of the Vice-Chancellor's duties, both now and under the proposed new system, he should have a competent personal assistant with a salary of Rs. 500 *per mensem*. The total cost of this would be Rs. 56,400 *per annum*. In the second place, there must be a substantial improvement of the office staff for the performance of its present duties; this should include an increase in the Registrar's salary and the provision of superannuation allowances for him, for the Superintendent of Examinations, and for several of the more important members of the office staff. For this purpose the amount required cannot be

[1] See Chapter XXVII.

put at less than Rs. 15,000 *per annum*. Government now makes an annual grant of Rs. 25,000 for inspection and administration; but it is almost wholly swallowed up by the expenses of inspection of colleges, which will not diminish. There is urgent need, also, for an improvement of office accommodation, but this will be covered by the estimate we shall suggest for buildings, which will most conveniently come under the head of the teaching organisation of the University. The total additional annual outlay for administrative expenses which we recommend that Government should immediately supply thus amounts to Rs. 71,400 *per annum*.

36. When the new system which we have proposed is brought into effective operation there will be large changes in the administrative system. The removal of the cost of superintending the matriculation and intermediate examinations and of the recognition of schools will immensely relieve the existing burden upon the office. On the other hand, the conduct of the business of the numerous governing bodies and committees which will be brought into being will involve responsibilities of a new order. Balancing the effects of these changes, we think that the future cost of efficient administration in the University will not be materially reduced; but this is a point upon which a more exact enquiry would be necessary later. It should be borne in mind that the extended activities which we propose for the University will call for the establishment of a number of new Boards, which will have administrative expenses of varying amounts.

37. Under the head of administration should be counted the cost of travelling allowances necessary to enable mufassal representatives to attend meetings in Calcutta and *vice versâ*. For this purpose a grant of Rs. 5,000 is now made by the Government of India. It does not nearly meet the existing charges, and the lack of money for this purpose is given as one of the reasons for failure to consult sufficiently the interests of mufassal colleges. Under the new system the charges under this head will be considerably increased, owing to the large membership of the proposed Court, and the new organisation proposed for the control of the mufassal colleges. We have tried to keep this charge within reasonable limits by suggesting that the court should meet infrequently and that the Mufassal Board should do most of its business at a single meeting in each year. But, in view of the conditions of travel in Bengal, and the great importance of frequent consultation be-

tween teachers and examiners, we recommend that the grants for travelling allowances should be increased by Rs. 10,000.

38. The transference of the duty of conducting the matriculation and intermediate examinations (or their equivalents) from the University to the Board of Secondary and Intermediate Education will at once deprive the University of its main existing source of revenue, the profits on examinations. Out of this revenue the main burden of the cost of the existing system of post-graduate instruction is defrayed, in so far as it is not met by tuition fees. It is clear that the University must be compensated; and we recommend that from the date of the establishment of the Board of Secondary and Intermediate Education, a fixed annual grant should be made, equivalent in amount to the profits derived from these fees. We have not been able to determine the precise amount of revenue derived from this source, but it may work out at between three and four lakhs. Apart from the manifest necessity of such compensation, it would represent a real reform that the University should no longer derive so large a proportion of its income from so uncertain a source as examination fees.

39. *Needs of colleges.*—The present condition of some of the colleges in Calcutta is the principal cause of existing evils. Apart from the three Government arts colleges and the colleges of medicine, engineering and law, only three colleges are in receipt of Government grants; these are helped by missionary funds; the others are wholly or mainly dependent for their maintenance upon the fees paid by their students. The teachers are far too few in proportion to the students, and are paid grossly inadequate salaries. Furthermore, apart from the aid recently granted by Government, the colleges are quite unable to make such provision for the residential needs of their students as the social conditions of Calcutta urgently and imperatively demand. It is necessary that steps should at once be taken, in accordance with a systematic plan, to deal with these needs. It may be felt that it is impossible either for Government or for private benefactors to deal satisfactorily with a problem so immense as that resulting from the continuous and rapid increase in the number of students, very many of whom are quite inadequately prepared for university work. There is justification for this feeling, but the longer the solution of the problem is postponed, the more difficult it becomes. We have suggested, in the proposed new secondary and intermediate system,

a means for ensuring that candidates for university training are on the one hand properly sorted out, and on the other adequately prepared. But it will take some years to bring this system fully into operation. In the meanwhile the problem becomes more difficult; and the very process of providing separate accommodation for intermediate students will render the difficulties of the colleges from which these students are withdrawn more acute. In any event immediate action is necessary; but, even if for any reason the operation of our proposals is delayed, this action should have the future reform of the university system fully in view.

40. We estimate that when the reforms we propose are fully carried out, there will be about 11,000 post-intermediate students in Calcutta, of whom about 8,000 (including a large proportion of the post-graduate students as well as the undergraduates) will be studying in arts colleges and the remainder in professional colleges. So far as the provision of teaching is concerned, the deficiencies of the professional colleges, though in some cases considerable, are not so great as those in many of the arts colleges. So far as residence is concerned, the needs are equally glaring in both cases. It will be desirable to deal first, and separately, with the provision of teaching in the arts colleges.

41. The conditions for the organisation of 'constituent' colleges defined in Chapter XXXIV (which was not intended as ideal but as minimum conditions) require in the first place that no college should take more than 1,000 students. Colleges will, and ought to, vary in size. But for convenience of calculation we assume that there will be six colleges of 1,000 students (of which Presidency College would be one) and four of 500. As Presidency College already meets the requirements, this reduces to five the number of colleges required to accommodate 1,000 students each. In each college there is to be at least one teacher for every 25 students; no teacher is to be paid less than Rs. 125 *per mensem*; and in each of the principal subjects there is to be a responsible head, paid not less than Rs. 300. On this basis, if we allow for a principal at Rs. 500 and 8 heads of departments at Rs. 300; and if we fix for the other teachers an average of Rs. 200, the cost of the staff alone would be, for a college of 1,000 students, Rs. 9,100 *per mensem*, and for a college of 500 students, Rs. 5,100 *per mensem*. The average salary of all members of the staff, excluding the principal, in a college of 1,000 students would be Rs. 220 *per mensem* or £180 *per annum*.

This is less than the existing average salary in Government colleges, but markedly better than the average salary now paid in private colleges, whether in Calcutta or in the mufassal. But, under the system which we have advocated, many of these teachers would also be eligible for appointment as university lecturers. With that prospect, the kind of salaries here suggested, though modest enough, would stand in a very reasonable relation to the average income of the classes from which the teachers were drawn; and, under the conditions of life prevailing in Bengal, would afford a living wage; which in very many cases the existing salaries do not do.

42. To the salary list of a college must be added an estimate for library and laboratory equipment, for office expenses, for maintenance and repairs, for the cost of supervising hostels and messes attached to the college, and for rates, lighting and fans. These charges could not be adequately met for less than Rs. 20,000, on the average; and the charges would not vary greatly between the large and the small college. Hence the gross cost of running a college of 1,000 students would be Rs. 1,29,200, and that of running a college of 500 students Rs. 1,05,200 *per annum*. From these gross totals fees would have to be deducted. If they were charged at 5 rupees *per mensem*, they would reduce the *net* cost of the larger college to Rs. 69,200 *per annum*, and of the smaller to Rs. 75,200 *per annum*; if at 6 rupees, to Rs. 59,200 and Rs.69,200 respectively. We have as yet made no allowance for scholarships and free places. For this purpose about 15 per cent. of the fee revenue should be allowed on the average; and on this basis it would appear to be impossible to run a college of 1,000 students with reasonable efficiency at a less *net* cost, over and above fees, than of about Rs. 80,000 *per annum*; or a college of 500 at a less *net* cost than of about Rs. 85,000. And this means, that to maintain a number of colleges sufficient for 8,000 students (assuming 1,000 of them to be already adequately provided for by Presidency College) must involve a net annual outlay of about Rs, 7,00,000 in round figures.

43. Government already expends substantial sums upon college education in Calcutta, and these are not taken into account in the calculations given above. But its main expenditure is upon Presidency College; and we have counted off this college as already

provided for. Its grants cannot be reduced; indeed, as we shall argue later, they ought to be increased. But about Rs. 50,000 are expended in grants to non-Government colleges; and the sum (which is Rs. 13,000) expended upon the arts department of the Sanskrit College (which we propose should be reorganised as the basis of one of the new colleges) should also be taken into account. This would reduce the *net* additional expenditure required for arts colleges in the city of Calcutta by about Rs. 63,000.

44. We do not suggest that the annual sum (Rs. 6,37,000) arrived at by these calculations should be immediately found by Government; but it is necessary to recognise that, whether our proposals for reform are accepted or not, subventions on this scale are necessary if the training of students in Calcutta above the intermediate stage is not to remain in the dangerously inefficient condition which we have described. The necessary money would be best spent if it were gradually spent; it will be especially and growingly necessary during the period of transition; and we suggest that Government should be prepared to offer grants to colleges to help them to make the readjustments necessitated by the withdrawal of the intermediate students, stipulating that these grants should be so employed as gradually to enable each college to fulfil the conditions laid down for constituent rank. It is not yet possible to foretell with accuracy what will be the effects of the various changes that we have proposed. It may be (though it is not probable) that the establishment of efficient intermediate colleges, the opening of the University of Dacca, and the development of the better mufassal centres will have the effect of reducing the pressure upon the Calcutta colleges; and that, therefore, the full amount named above may not be ultimately required. It may be, also, that private generosity will be encouraged to come to the aid of the colleges. We hope that this will happen; but it will not do to build upon it. In any case, private donors should not be made to feel that their gifts merely relieve Government. We suggest, therefore, that a scale of grants should be fixed which will be offered to colleges to enable them to fulfil the conditions for constituent rank. The figures we have named represent only a reasonable minimum; and any benefactions which may be forthcoming from private sources ought to represent an enrichment of the equipment beyond this minimum.

45. We have recommended the establishment of an Islamia College for Musalmans and of a Hindu College based upon the existing arts department of the Sanskrit College. The ordinary maintenance of these colleges would be covered by the sum named above; though it should be noted that if they are designed for less than 500 students, they will be relatively more costly to maintain. The Islamia College, also, will have to be equipped with scholarships upon a generous scale.[1] We have recommended that to these colleges certain new chairs should be attached, the holders of which would give instruction open to the whole University besides being responsible for their subjects in the colleges. The difference between the salary of Rs. 300 allowed for the ordinary head of a college department, and the salaries fixed for these chairs, ought therefore to be allowed for as an additional charge. As it is impossible to determine beforehand what figure ought to be fixed for the chairs in order to obtain the services of competent scholars, we cannot give an exact estimate on this head. Five chairs at a monthly salary of Rs. 600—800 would involve an extra expenditure of about Rs. 25,000. For both of these colleges new buildings would have to be provided: we can frame no estimate of the capital cost which would be involved.

46. Nor can we suggest any estimate for the other new collegiate buildings which may be required in the future to accommodate the teaching work of the constituent colleges. These buildings ought to be within easy reach of College Square, where land is extremely costly and difficult to acquire. We throw out the suggestion that if or when, as proposed in Chapter XXXIX, systematic residential provision is made on cheaper ground in suburban areas, the large and solidly built hostels recently erected in the central area might perhaps be transferred, wholly or partly, to teaching purposes, to which they could be readily adapted.

47. The changes which we have recommended in regard to Presidency College (Chapter XXXIV) will involve financial readjustment but probably, with one exception, no increased expenditure. The exception is the proposal that there should be a number of Presidency Chairs, filled by western-trained men. To attract the

[1] It may be necessary to strengthen the teaching staffs of the Calcutta Madrassah and of the *tôl* department of the Sanskrit College in order to provide the university diploma courses recommended in Chapter XLII.

right type of man, a salary of Rs. 1,000—1,500 will probably have to be offered. The amount of additional expenditure thus caused cannot at once be computed; but if ten chairs are established, it will probably amount to about Rs. 50,000 extra. The additional strength which would thus accrue both to the college and to the University, and the strengthening of the relations between them, seem to us fully to justify this expenditure as part of the proposed reorganisation. It has further been strongly represented to us that an extension of the scientific laboratories of the college is necessary. This should be considered in connexion with the provision of preliminary scientific training for medical students and of other courses.[1] We cannot make an exact estimate of the capital outlay required, but it might amount to 4 lakhs of rupees.

48. The additions which we have suggested to the equipment of the professional colleges of medicine and engineering stand in a somewhat different category from the improvement of the arts colleges. They are not urged as immediately indispensable in order to remove grave evils; nor are they put forward as essential to the carrying out of our proposals for reconstruction. This does not mean that they are not important, or ought not to be undertaken at as early a date as possible. But they relate rather to the improvement of professional training than to the reorganisation of the University as such. We prefer not to make estimates on these heads; they can best be dealt with separately, by the appropriate authorities. One feature of these proposals, however, has a more general bearing. It is the proposal that the responsibility for providing training in the preliminary sciences for medical students (if and in so far as it cannot be dealt with by selected intermediate colleges) should be transferred from the Medical College, thus releasing much needed accommodation, and be undertaken either by the University or the colleges. There is not at present either sufficient staff or sufficient accommodation available for this purpose. But we do not propose to offer an estimate, seeing that the need can perhaps best be met in connexion with necessary expansions of the scientific resources of the University and its colleges at large; and ought, in any case, to be thoroughly worked out, in

[1] See, for example, Chapters XXIII and XLIV (Medicine) and XXV and XLVII (Agriculture).

reference to the new intermediate scheme, and in consultation with the Medical Faculty.

49. We turn next to the need of additional residential accommodation for students in Calcutta. This is recognised to be one of the gravest aspects of the university problem; and the large expenditure of Government in recent years for the provision of hostels (nearly 38 lakhs between 1911 and 1915; and there are unspent balances available) is as yet far from sufficient to meet the need. There are at present, out of about 16,000 students of all types working in Calcutta, probably between 8,000 and 10,000 who do not reside with their parents or natural guardians, and for whom some sort of provision should be made. The actual accommodation in properly organised hostels provides for 2,253, while there are 2,556 in attached messes, which are satisfactory in some cases but not by any means in all. It would appear, therefore, that only about half the need is met in any satisfactory way. But if the intermediate students are dealt with in the way we have recommended and if residence is provided for them by the Board of Secondary and Intermediate Education at mufassal centres where land is much cheaper, the aspect of the problem will change. There are 7,000 intermediate students in Calcutta, of whom a considerable majority come from the mufassal. Though our available data are in some respects vague and unsatisfactory, a careful analysis of them seems to show that on the figures of 1917-18 the number of post-intermediate students, for whom provision should be made in Calcutta, is about 6,400, including those in medicine and law, so that if all the available accommodation in hostels and attached messes were devoted to these students, only a little over 1,600 would be unprovided for. The number may be even less than this, since it is difficult to apply to the large number of post-graduate and professional students exactly the same treatment as to undergraduates. It must be recognised that much of the existing provision in attached messes—organised in rented houses—is unsatisfactory. But it could be greatly improved if it were permitted to hire these houses for a longer period than a single year.

50. In view of the changes which we have proposed, it would be folly to suggest making residential provision for the whole existing body of students. Provision should be made only with a view to the needs of the future system. But in the meanwhile, to tide over

the transition period, we recommend that colleges should be encouraged and helped to hire houses for a longer period than one year, and that for this purpose increased grants should be made out of the unspent balances.

51. We do not recommend the immediate erection of new hostels in the central area of the city, where ground is excessively dear. In Chapter XXXVIII we have urged that an enquiry should be held into the best mode of dealing with the problems of educational accommodation in Calcutta as a whole; and that suitable sites for hostels should be acquired in the suburbs. It is estimated that the cost of erecting good hostels (apart from land) averages Rs. 1,000 per student.[1] The cost of hostels for 1,600 students would therefore be about Rs. 16,00,000; and if (say) half of the existing accommodation in attached messes were replaced by hostels the additional building cost would be about Rs. 12,00,000. This is, of course, exclusive of land; but it is our hope that, with the co-operation of the Calcutta Improvement Trust and Corporation, blocks of suitable land in the suburbs might be obtained at a relatively low rate. We have suggested the development of the University Institute and, as an experiment, the opening of one or two smaller institutes on a new plan (similar to the Y. M. C. A. huts) in the students' quarter in Calcutta and especially in connexion with groups of hostels which may be built in the suburbs. For experimental work of this kind and for provision of gymnasia and superintendents' quarters in certain hostels we suggest an outlay of about 2 lakhs of rupees. We hope that private beneficence will in this sphere come to the aid of Government: the provision of a model hostel being a peculiarly appropriate form for the expression of a rich man's interest in the welfare of students. But the Government should find, during the next five or six years, something like 30 lakhs of rupees for residential and cognate needs.

52. We have now surveyed the principal needs of the colleges, both as they are now, and as they would be under the system of organisation which we propose; and it has, we hope, been made clear that the very considerable cost of meeting these needs is not due to the form of the organisation which we propose, or is only due to it in a very slight degree; but that expenditure on

[1] Experience shows that small hostels (for 40 or 50 students) are by far the best. Small hostels, however, are relatively more costly to build.

something like the scale indicated above would in any case be necessary as a means of removing the worst evils of the present system, even if the system itself remained unchanged. It is also apparent not only that the additional expenditure proposed can be gradually and progressively undertaken, but that it ought to be so, both in regard to the teaching organisation and in regard to the provision of residential facilities, because it is only gradually that it will be possible to measure with accuracy the exact effect of the other changes embodied in our scheme, and particularly of the intermediate colleges. It is even possible (though not perhaps likely) that these changes, if largely enough conceived and generously enough executed, may lead to an actual diminution of the rush towards purely literary courses, and to a change in the direction of the current which (if it takes place) ought to be taken into account before the whole of the funds we have asked for are expended.

53. We come next to the outlay which is necessary or desirable in order to strengthen the teaching organisation of the University. In dealing with this branch of the subject it will be convenient first to consider the needs of the system as it is now working; but always to keep in view the fact that our scheme proposes a unification of the resources of the University and the colleges in regard to both undergraduate and post-graduate work in the Faculties of Arts and Science, and that therefore it is essential to avoid unnecessary duplication.

54. The post-graduate scheme described in Chapter XV is carried on at a cost of more than 5 lakhs of rupees, of which Rs. 1,25,000 is derived from lecture fees. The Government of India has contributed towards the cost first by founding three chairs and two readerships at an annual cost of Rs. 40,000; and secondly by a grant for the post-graduate classes in general of Rs. 15,000. The balance, more than half of the total, is taken from the general funds of the University, which are in fact derived almost wholly from the profits on examinations. Fees at the matriculation, intermediate and B. A. examinations have been increased in order to meet these charges. The 138 full-time university lecturers who provide the bulk of the instruction are paid salaries, varying in amount, which average Rs. 225 *per mensem* or £180 *per annum*. The funds do not permit these salaries to be increased, nor is any

superannuation scheme provided; it is consequently difficult to retain the services of some of the abler teachers. It would demand an additional expenditure of about 1¼ lakhs to increase the average salary to Rs. 300; which is not excessive for this grade of work, seeing that we have suggested Rs. 200 as the average for those of the college teachers who are not heads of departments.

55. If our proposals are carried into effect, and if the colleges are enabled to equip themselves on the scale proposed, a very large proportion, if not the whole body, of post-graduate students, would ultimately be members of the colleges and identified with their corporate life, and it may be asked whether this ought not to affect the question of making grants to a central teaching organisation which would then be no longer necessary on the same scale. But the existing post-graduate scheme will have to be continued until the new scheme is brought into working order, and help is needed for this purpose. Moreover, when the time for the change comes, and the system of co-operative teaching is established, the need for substantial funds at headquarters will be not less than it now is, though these funds would then be used in a different way. To some extent they would have to be employed for paying supplementary allowances to college teachers for doing university work, or to the colleges themselves in order to enable them to obtain additional teaching strength. The teaching strength of the colleges by themselves, even on the scale we have defined, would be insufficient. We have allowed for only one teacher to every 25 students. It is a low proportion. The proportion suggested for Dacca is one to fifteen. And if the whole of the existing university staff were distributed among the colleges in Calcutta, the proportion would still be only one to seventeen. The truth is that the teaching strength engaged in university work in the University and colleges taken together is not nearly great enough to do justice to the number of students; it will not be unduly great even if the existing university staff is maintained at full strength, and combined with college staffs planned on the scale we have suggested. We therefore recommend that the sum of 1¼ lakhs should be provided for the strengthening of the existing post-graduate staff, with a view to its being ultimately employed to strengthen the college staffs by means of University payments to 'appointed' teachers when the new system comes into operation.

56. Certain new teaching posts in the University seem to us to be essential for the adequate working of the new system, and immediately desirable even if the new system is delayed. First among these we should place the establishment of a department of education. We have in Chapter XLIII shown the almost incalculable importance of the work that could be done by such a department, not only for the University, but for the whole educational system. It is important that the first professor of education should be a man of wide knowledge and varied experience, versed in western educational experiments. He should in our judgment be paid not less than Rs. 1,000—1,500 *per mensem*, together with a superannuation allowance of 10 per cent. and the appointment should be made in England in the method suggested in Chapter XXXIV. He would require at least four chief assistants at salaries of, say, Rs. 200—400, also with superannuation allowances. The total cost of these salaries should thus amount to about Rs. 29,000. Other necessary departmental expenditure cannot be exactly computed, because it should be arranged for, as far as possible, in connexion with the training college for which we are not estimating. This would be a remunerative investment since its main purpose would be to bring the university courses into effective relations with the needs of the schools. The professor of education should have a suite of rooms at the headquarters of the University, but he should also be intimately connected with the new training college for which Government has already made preparations. Ultimately, if an adequate number of trained teachers are to be supplied for the needs of the schools, a second and larger training college, more closely connected with the University, would be desirable; but we put forward no estimates for this.

57. We have directed attention to the very great importance of dealing with the physical weakness of many Bengali students, and of providing them with guidance in the training of their bodies. For this purpose we recommend the appointment of a Director of Physical Training, of the type now being produced with admirable results in many American universities. While we cannot state definitely the salary which ought to be paid to attract the right sort of man (who should be a medical man and an expert in physical training at the same time) we suggest Rs. 1,000. For the work of dealing with such immense numbers of students he would need, even for initial and tentative work, a couple of well qualified assistants.

The cost of this staff as a whole might therefore be something like Rs. 18,000 *per annum*. For further assistance and for appliances we estimate that about Rs. 6,000 might be required annually.

58. Some of the new university Boards may undertake special work for which substantial expenditure would be required. For example, the Board of Women's Education might conduct enquiries into methods of education for girls and women and for this the annual sum of Rs. 9,000 might not be too much. Again, if the Board of University Extension throws itself with great activity into the organisation of courses of lectures in different centres, it might require an annual grant amounting to as much as Rs. 18,000. Thirdly, the Board of Examinations might find it necessary especially at first to conduct enquiries on a scale calling for the expenditure of as large a sum as Rs. 12,000 *per annum*.

59. It is in our judgment a grave reflection upon the university system of Bengal that it has done so little for the serious study of Bengali philology and literature. We recommend that this defect should be at once amended by the establishment in the University of a Chair of Bengali, at a salary of at least Rs. 600—900 *per mensem*; the professor would naturally work in close association with a group of college teachers, but the guidance of such a man would be necessary for the successful initiation of the serious study of the subject. Provision should also be made for Urdu.

60. The difficulty of the medium of instruction, which has been fully discussed elsewhere in this report, makes it eminently desirable that modern methods of language study should be pursued in the University; and we recommend the establishment of a post in phonetics on a salary of Rs. 750. Again, in view of the high importance of statistics as an aid to many branches of study, a similar teaching post at a corresponding salary would also be valuable. Each of these posts would form the nucleus of a department to be developed later, but even in the first instance we estimate that a sum of Rs. 300 *per mensem* might be required for subsidiary expenditure in each department.

61. In view of the position occupied by Calcutta not only in Bengal but in India, and of the importance of the part which a

great university in the city might play in the study of many subjects of high importance, we append a list[1] of subjects in which departments of study ought in future to be established as funds permit. We hope that many of these would be provided by private munificence.

62. But the University needs, for the proper conduct of its work, not only additional teaching strength, but immediate capital expenditure for the provision of teaching accommodation and

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1. New branches of study, at present not represented in the University of Calcutta or its colleges in which, as funds allow, teaching might advantageously be undertaken.*

(i) Indian vernaculars.
(ii) Hebrew and Syriac.
(iii) Greek and Latin.
(iv) French, German and other European languages.
(v) Phonetics.
(vi) Geography.
(vii) Palæontology.
(viii) Astronomy.
(ix) Entomology.
(x) Bio-chemistry.
(xi) History of medicine.
(xii) Meteorology.
(xiii) Aeronautics.
(xiv) Naval architecture.
(xv) Agriculture.
(xvi) Forestry.
(xvii) Sciences of leather industries.
(xviii) Colour chemistry.
(xix) Metallurgy.
(xx) Sciences of textile industries.
(xxi) Ethnology.
(xxii) Religions.
(xxiii) Sociology.
(xxiv) Architecture.
(xxv) Indian graphic arts.
(xxvi) Indian music.
(xxvii) Indian numismatics.

2. Further development is desirable in the following branches of study already existing in the University of Calcutta or its colleges.* The provision in some of these subjects is quite inadequate :—

(i) Comparative philology.
(ii) English.
(iii) Sanskrit.
(iv) Pali.
(v) Arabic.
(vi) Persian.
(vii) Tibetan.
(viii) Chinese.
(ix) Japanese.
(x) Philosophy.
(xi) Experimental psychology.
(xii) Education.
(xiii) Physical education.
(xiv) History including Islamic history.
(xv) Jurisprudence.
(xvi) Economics and Commerce.
(xvii) Statistics.
(xviii) Physics.
(xix) Chemistry.
(xx) Botany.
(xxi) Zoology.
(xxii) Physiology.
(xxiii) Bacteriology
(xxiv) Mining.
(xxv) Engineering, mechanical and electrical.

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* The order in which the subjects are mentioned does not indicate relative urgency or priority of claim.

equipment. The Darbhanga Building, its only centre of teaching, has to find room for the very largely attended law classes and for the post-graduate classes which are frequented by 1,500 students, besides accommodating the Library, the Law Library and the administrative offices. It is impossible to carry on the steadily expanding work under these conditions; and we have seen several classes being carried on simultaneously in the huge echoing Senate Hall. It will be impossible to carry on without additional accommodation the new system of co-operative teaching which we have advocated; for though college lecture rooms can be used for this co-operative work, and we hope they will be used to the maximum possible extent, it is essential that there should be abundant accommodation at headquarters. And further demands upon accommodation will be made for the improvement of the administrative system, and by the work of the departments of education and of physical training. The need for additional accommodation has long been felt. The Government of India found the money for the purchase of the fish-market site which is ready to be used; and as a considerable economy was effected in the purchase of the site, a sum of about 4 lakhs is in hand for building. Before the war the cost of the building planned to fill the site was estimated at 10 lakhs. We think that in order to make the fullest use of the space the building proposed should be a five-storied one; and in view of this, and of the increased cost of building, we think that 13 or 14 lakhs ought now to be allowed; while the furnishing of a building on this scale would probably cost a lakh. For these purposes a capital sum of about 11 lakhs will have to be provided; and without this provision the new system which we propose will be crippled from the outset.

63. Not less important than buildings are books, an essential material of all serious study. The University Library is of very recent origin; and some of the indispensable parts of a sound equipment are still lacking to it. Much might be done by systematic co-operation with other libraries, especially that of Presidency College, so conveniently near. But this is not enough. The University of Calcutta should have a first-rate library; and we recommend that a sum of 2 lakhs should be provided for initial expenditure on books and an annual library grant of Rs. 50,000 for the further purchase of books and periodicals For the proper use

of a library, and still more for the proper co-ordination of several libraries, highly skilled library direction is necessary. What is needed is a man of professorial standing, with a salary of (say) Rs. 600—800 *per mensem*, and we recommend that funds should be provided for the engagement of such an officer.

64. From the benefactions of Sir Tarak Nath Palit and Sir Rash Behary Ghosh the University has been enabled to make a considerable advance in the higher teaching of science. But, for the erection of the College of Science in Upper Circular Road, the University itself had to find the funds out of its accumulated balances, and without aid from public sources. These balances are now exhausted; and the laboratories are as yet only half-equipped. About a lakh will be required for their adequate equipment. The Government of India makes a grant of Rs. 12,000 *per annum* for the maintenance of the Palit laboratories in physics and chemistry. The botany and zoology laboratories stand in need of equipment; and this equipment (including departmental libraries) will cost about Rs. 50,000. The accommodation in the College of Science is too small to permit of its expansion; especially if the College is to become a centre of technological training, as was intended by the founders of the Ghosh and Palit Trusts. There is some room for expansion on the site; but it would be highly desirable that a neighbouring site should be acquired before the price soars too high; it could now be got for about 4 lakhs. This should be provided, together with 6 lakhs for building. We have already noted that expansion is also necessary in the scientific laboratories of Presidency College. This college is likely to become the chief centre of pure science teaching, and of honours work in several branches, just as the College of Science, without excluding pure science, is likely to become the chief centre of technological work.

65. And this brings us to a final topic, hitherto untouched; the need for the development of certain of the more practical branches of higher work. Hitherto we have been discussing the demands of the kind of work already carried on. But it is vitally important that the influence of the University should be so exerted as to draw able young men into the scientific industries, and to forward research into their problems. The need of advance in this

direction has recently been emphasised on two sides: by the University, in its schemes of technological courses which are discussed elsewhere; and by the Indian Industrial Commission. We recognise that, when the proposals of the Indian Industrial Commission are carried into effect, some developments in this field ought to take place in co-operation with Government and we strongly urge the importance of associating work of this kind with the University both in order that technology may not be unduly separated from pure science, and in order that the carrying on of such work may be allowed to exercise its influence upon the life and thought of the University and its students. It is obvious that Calcutta, among the leading industrial centres of India, has a high claim to be made a principal centre of such work. We have recommended in Chapter XLVIII that equipment should be provided for teaching and research in colour chemistry, in the sciences of the leather industry and in the sciences affecting the oil and fat industries. We estimate that a good start could be made in these industries at a cost of Rs. 2,500 *per mensem* in each case. We have also recommended that the University should institute a course of training for agricultural experts, working in connexion with a proposed Government Institute, but also able to utilise a model farm which is, we understand, likely to be available. We estimate the cost of carrying out the scheme described in Chapter XLVII at about Rs. 2,200 *per mensem*. The total cost of making a start in these new practical departments would thus amount to about Rs. 1,16,400 *per annum*. We should hope that, once started, they would receive material aid from the industries they would serve.

66. We return in conclusion to the need for facing the cost[1] involved in effecting reform in the conditions of students' residence in the city of Calcutta and at the degree colleges (excluding those at Dacca) in the Bengal mufassal. In Chapter XIX we have shown that such a reform is necessary in the interests of health and discipline: in Chapter XXXIX we have suggested the steps by which it may gradually be realised. The Universities' Commission of 1902 in directing attention to this difficult problem, expressed the hope that the efforts of the colleges in contributing to the maintenance of hostels for their students would be seconded by public-spirited

[1] See Summary Table II, in para. 75 below.

and generous benefactors of education.[1] Down to the present time this hope has been disappointed and almost the whole cost of what has been done has fallen upon the public funds. But when public opinion realises more fully the urgency of the need for safeguarding the health and welfare of the students, we think it is not unlikely that the provision of hostels may appeal more powerfully than hitherto to the generosity of private benefactors, especially as the helping of young scholars in their poverty is in accord with Indian traditions of charitable duty. We hope therefore that, when a plan of residential accommodation under collegiate supervision, including the establishment of groups of hostels in healthy suburban sites, has been formulated upon the lines suggested in this report, the necessary contributions from public funds may be supplemented by gifts and legacies from private donors.

V.—The mufassal colleges.

67. If the establishment of teaching universities in Calcutta and Dacca is not to drain all the post-intermediate students from the mufassal into these centres, it will be necessary to bring some of the mufassal colleges up to a point of efficiency such as none of them has yet reached. For these colleges assistance should be forthcoming on a scale similar to that suggested for the constituent colleges of Calcutta. But it would be in the highest degree wasteful to attempt to do this for all the mufassal colleges. Our proposals imply that there will be a concentration of resources in a limited number of centres. We suggest that new grants on the scale proposed should be made only to those colleges which are prepared to fulfil the conditions laid down for university colleges in Chapter XXXV, and, in particular, to devote themselves wholly to post-intermediate work at the earliest practicable date, when adequate provision has been made for the intermediate colleges. We think it also very important that these colleges should appeal for the support of their districts, or of the special interests which they may serve, and should obtain substantial assistance in this way in striving for higher rank.

68. We recommend, therefore, that Government should undertake to make grants to a limited number of mufassal colleges

[1] Report, paras. 92-194.

sufficient in amount to enable them to fulfil the conditions laid down for university colleges, provided that :—

(1) after report from the Executive Commission, or Council, of the University, Government is satisfied that the college may appropriately be treated as a potential university;

(2) the college devotes itself wholly to post-intermediate work and is able to attract a sufficient number of students to make this concentration economically advisable; we do not think that as a rule less than 300 students should suffice for this purpose;

(3) the college has obtained substantial support and assistance in the form of endowments or adequately guaranteed subscriptions, from non-Governmental sources.

69. If the teaching work of the post-intermediate grade is to be concentrated at a limited number of mufassal centres, it will obviously be necessary to make ampler provision than is now made for students' residences at these centres. No doubt the withdrawal of the intermediate students from the colleges thus dealt with would release a good deal of accommodation—the intermediate students being provided for by the Board of Secondary and Intermediate Education. But every college which aspires to the grade of a university college must be expected to make far more adequate provision for the residence of its students than is now usual, and for that purpose to enter upon a systematic policy of hostel-building. Hostels in the mufassal, where land is relatively cheap, should be of the simplest and most inexpensive design consistent with permanence. But funds will have to be made available for their erection.

70. We propose that a capital grant of 4 lakhs of rupees should be made for the provision, on a systematic plan, of new hostel accommodation for students attending degree colleges in the mufassal (excluding Dacca) and that an annual grant of 5 lakhs should be made to mufassal degree colleges for the improvement of their work, together with an annual grant of 12,000 for the administrative expenses of the Mufassal Board.

71. Most of the mufassal colleges are already in receipt of grants. We propose that these grants should in all cases be continued,

but that (except in the case of university colleges) they should not be increased. If or when any of the existing first-grade colleges devoted itself wholly to intermediate work, and passed under the jurisdiction of the Board of Secondary and Intermediate Education, its grant as a college of the University would of course lapse, since its needs would be provided for by the Board. The lapsed grant might then be made available for the further development of the university colleges.

72. The administrative work of the Mufassal Board would necessarily involve some expense. We propose that the revenue and expenditure of the examinations in the mufassal colleges should be kept in a separate account, and that any profit from them should go towards these administrative charges. But it is not to be anticipated that the surplus (if any) would be sufficient to meet these charges. It therefore seems necessary that they should be imposed upon the taxpayer. The chief items would be (i) the salary of a secretary (say) Rs. 400 *per mensem*; and (ii) the travelling expenses of members of the Board, say Rs. 5,000 per annum, or a total of (say) Rs. 9,800 *per annum*. To cover contingencies we suggest a total grant under this head of Rs. 12,000 *per annum*. Should any considerable number of the existing mufassal colleges pass into the category of intermediate colleges, the charge for travelling expenses would be proportionately reduced; and the grant might be revised at the end of five years.

73. Some expenditure will be required to provide for the work of the Executive Commission, but we put forward no estimate, since the amount needed would vary with the scope assigned to the Commission (Chapter LII, paragraphs 53-62).

VI.—Conclusion.

74. In summary, the new annual expenditure which seems to us necessary to give effect to our proposals and to give a fresh start to secondary and intermediate education in Bengal is that which is set out in the table below. This represents, not an ultimate ideal, but a reasonably generous treatment of an urgent need, such as would overcome most of existing needs, and enlist new forces in dealing with them.

75. It will now be convenient to summarise in tabular form the recommendations we have made.

I.—Additional annual [1] *grants proposed for new purposes.* [2]

		Rs.
A. Improvements in secondary and intermediate education excluding revenue from examinations (para. 19)	...	40,00,000
B. Dacca University—		
Immediate expenses for 1,500 students (para. 32)	7,00,000	
Additional cost for 500 additional students in Dacca (para. 26)	80,000	
		7,80,000
C. Teaching University of Calcutta—		
(*a*) Administration (para. 35) . . .	71,400	
Expenses of new Boards (para. 36) .	39,000	
(*b*) Travelling expenses (para. 37) . . .	10,000	
(*c*) New university chairs at the Sanskrit and Islamia Colleges (para. 45). . . .	25,000	
(*d*) Addition for Presidency Chairs (para. 47) .	50,000	
(*e*) Fund for payment of university teachers (para. 54)	1,25,000	
(*f*) Department of Education (salaries) (para. 56)	29,000	
(*g*) Physical education of students (para. 57) .	24,000	
(*h*) Bengali (para. 59)	9,000	
(*i*) Urdu (para. 59)	6,000	
(*j*) Phonetics (para. 60)	12,600	
(*k*) Statistics (para. 60)	12,600	
(*l*) Library grant (para. 63)	50,000	
(*m*) Librarian (para. 63)	7,200	
(*n*) New technological departments and agriculture (para. 65)	1,16,400	
(*o*) Contribution to Calcutta colleges for their improvement [3] (paras. 43-44) . .	6,37,000	
		12,24,200
D. Mufassal colleges (excluding Dacca [4])—		
Mufassal Board (para. 72)	12,000	
Contribution to mufassal colleges for their improvement (para. 70)	5,00,000	
		5,12,000
GRAND TOTAL .	...	65,16,200

[1] The compensation to be given to the University for the loss of the matriculation and intermediate examination fees is estimated at between 3 and 4 lakhs of rupees. This cannot be regarded as a new grant.

[2] For the gradual and progressive steps by which this expenditure would become necessary, see paras. 1,11, 13, 44, 52, 66.

[3] This includes provision for the new Islamia College and the reconstruction of Sanskrit College. So long as the post-intermediate course remains a two years' course this figure may be reduced to 4, if not 3, lakhs.

[4] We have not included estimates for the buildings required for the Teachers' Training College, the Islamia College and the additions to the Sanskrit College.

		Rs.
II. Grant from Government to the University of Calcutta in compensation for loss of matriculation and intermediate examination fees		3,00,000
III. Certain capital grants proposed for the Teaching University of Calcutta and mufassal colleges (excluding Dacca)[1]—		
New science departments at Presidency College (para. 47)	4,00,000	
Residential accommodation for Calcutta—Expenditure on hostels (para. 51)	16,00,000	
For replacement of attached messes (para. 51)	12,00,000	
Students' clubs, gymnasia, etc. (para. 51)	2,00,000	
Library (para. 63)—Initial grant for books	2,00,000	
Laboratories and libraries for botany and zoology (para. 64)	50,000	
Extension for technological laboratories, land and buildings (para. 62)	10,00,000	
New University building on fish market site and furniture for it (para. 62)	11,00,000	
Hostels in mufassal colleges (para. 70)	4,00,000	
		61,50,000

76. It may be urged not unreasonably that this represents an expenditure upon university education which is unduly high in proportion to that proposed upon secondary education. We recognise that this is so. But it may be noted that the sum of from three to four lakhs assigned as compensation to the University for the surrender of its profits on the conduct of the matriculation and intermediate examinations is really an expenditure on secondary education, inasmuch as it does not add to the existing resources of the University, and does release for the improvement of the schools the proceeds of the examination fees paid by students or their parents. Thus the annual sum proposed for secondary and intermediate work really amounts to Rs. 43 lakhs, and the new annual expenditure upon university education to Rs. 21 lakhs; that is to say, we propose that of the new expenditure not far short of twice as much should be devoted to the schools as to university work.

77. The Universities Commission of 1902 in the final words of their report,[2] declared that 'unless by Government aid or otherwise the financial position of the universities can be materially strength-

[1] For the gradual and progressive steps by which this expenditure might be undertaken see paras. 1, 50, 52, 65, 68.

[2] Report, page 72.

ened, the prospect of any thorough change for the better must be indefinitely postponed.' Our conclusion is the same. A new educational outlook is sorely needed in the schools and colleges of Bengal. But this reform, which must draw its chief strength from a determined movement in public opinion, cannot be achieved without larger funds. We have expressed the hope that a considerable and increasing part of the financial help which will be now required may be furnished by contributions from the well-wishers of education. But as giving a lead to this generosity, which will be all the more significant if it takes the form of a large number of small gifts from subscribers with narrow means, the action of Government is indispensable. Public authority may in many ways encourage private liberality and give wise direction to it. For this reason we have been the less reluctant to advise new educational expenditure from public funds upon a scale unprecedented in the financial history of Bengal.

78. But we are aware that what we have proposed may at first sight appear too exacting a burden upon the public revenues. We should agree, if the expenditure which we advise to be made were unproductive. But in our belief it will be remunerative expenditure, not only in its effect upon the deeper sources of moral strength but also upon the economic welfare of the country and upon its civic and industrial initiative. We should not have thought it desirable to propose expenditure with a view to the indefinite enlargement of the kinds of unprofitable education now prevalent in Bengal. Highly as we appreciate the sacrifices made by many parents and pupils in order that they may avail themselves of the existing educational opportunities, we are none the less convinced that the education which they receive is in most cases far from being well-adapted to their individual needs or to the present requirements of the country as a whole. Bengal requires types of education which make the individual more productive and enhance the social and economic well-being of the whole people. These types of education, however, are more costly than the education now supplied. If it is urged that the taxpayers of Bengal are too poor to be able to pay for the advantages of such an improved education, our answer is that Bengal is too poor to be able to afford the waste of ability which is caused by the present system. It squanders her most valuable asset, which is the brain power and moral vigour of her sons: in a grave degree it fails to turn their great abilities towards

the most socially useful ends: it does little to train their powers of initiative, and to inculcate independence of mind and judgment. A change which will help in getting rid of these shortcomings in the present system of education and which will give a stimulus to the capacity for public service in new careers will in the long run be an economy, as well as in other ways a boon to Bengal; and, through Bengal, to India and the world.

CHAPTER LII.

Summary of Recommendations.

1. The recapitulation of our main recommendations, set out below, is intended for convenience. The precise phrases of the following clauses must not be regarded as authoritative in themselves, but must be interpreted in the light of the fuller statement embodied in the foregoing chapters, to which references are appended in the margin. Moreover, we desire it to be understood that the recommendations set out below do not constitute the whole of our recommendations, but embody chiefly those upon which we think that immediate or early action ought to be taken. Many recommendations and suggestions, intended for the guidance of the new governing bodies of the universities, or of the proposed new authority for secondary education, are not here referred to, but will be found, with the considerations on which they are based, in the main body of the report.

Recommendations relating to secondary education.

2. No satisfactory reorganisation of the university system of Bengal will be possible unless and until a radical reorganisation of the system of secondary education, upon which university work depends, is carried into effect. The deficiencies of the existing secondary system are radical and patent. They arise, in the main, from four principal causes. (*a*) In the first place, most of the high English schools are under-equipped and are conducted by an underpaid and for the most part an untrained staff. (*b*) In the second place, they are unduly dominated by an examination (the matriculation) which is itself ill-designed and not of sufficiently high standard, and which gives no encouragement to many lines of study necessary for the welfare of the pupils and for the prosperity of the country. (*c*) In the third place, owing to the existing division of authority between the University and the Department of Public Instruction there is no adequate machinery for supervising, guiding and assisting the work of the schools as a whole; in other words, no coherent system of secondary education yet

Chapters VIII and X.

Chapters VIII and XXI.

Chapter IX.

Chapters X and XXVII. paras. 50-53

hapter XII. exists. (*d*) In the fourth place, a large and vitally important part of secondary instruction is actually conducted, not by the schools, but by the colleges of the University in their intermediate classes; and, because it is so conducted, it largely fails of its purpose, partly because the methods chiefly employed (those of the mass-lecture) are unsuitable for work at this stage, and partly because many subjects and lines of study, especially those which have a vocational bearing, are almost wholly disregarded.

3. A radical reform of these conditions is necessary not only for university reform, but also for national progress in Bengal. The principal changes which we recommend for this purpose are as follows:—

hapter XXI, ara. 3. (*i*) The stage of admission to the University should be (approximately) that of the present intermediate instead of that of the present matriculation.

hapter XXI, ara. 4, nd hapter XXII, aras. 1-9. (*ii*) The duty of providing training at the intermediate stage should be transferred from the universities to new institutions to be known as 'Intermediate Colleges,' some of which should be attached to selected high schools, while others should be organised as distinct institutions. There should be at least one intermediate college in each district of the Presidency, besides a certain number in Calcutta and Dacca; and the courses of the intermediate colleges should be so framed as to afford preparation not only for the ordinary degree courses of the University in arts and science, but also for the medical, engineering and teaching professions and for careers in agriculture, commerce and industry.

apter XXII, aras. 12-15.

hapter XXII, ara. 10. (*iii*) The intermediate colleges for men should in all cases be separate from degree colleges, and even where they are provided or managed by closely-linked authorities, should be organised under a distinct educational and financial control.

apter XXI, aras. 46-51 nd 55. (*iv*) There should be two secondary school examinations, the first, approximately corresponding to the present matriculation, to be taken at the end of the high school stage, at the normal age of 16, or, in special cases, at the age of 15, and to be known as the high school examination; the second, approximately corresponding to the present intermediate, but much more varied

hapter XXI, aras.)-45, and

in its range, to be taken at the end of the intermediate college course, at the normal age of 18, and to be known as the intermediate college examination. Success in this examination should constitute the normal test of admission to university courses. The range and standards of both of these examinations should be carefully reconsidered. Detailed recommendations on these heads will be found in Chapter XXXI, paragraphs 31-70, and in Chapter XXXII. Chapter XXXII.

(*v*) The existing Department of Public Instruction is not so organised as to be able to regulate and supervise the new system; more than half of the high English schools are at present entirely outside its jurisdiction. And although the University is entitled to a large voice in their affairs, its governing bodies cannot be so organised as to be able to deal effectively with them, especially as they lack the necessary funds. We therefore recommend that there should be established a Board of Secondary and Intermediate Education, to consist of from fifteen to eighteen members, with power to appoint advisory and other committees including outside members. Among the statutory committees of the Board should be included a committee on the education of girls and a committee on madrassahs, the latter to conduct the examination of the reformed madrassah course. The Board should also have the power to constitute provincial or divisional advisory councils. Chapter XXXI, paras. 11-39. Chapter XXXVI, para. 6. Chapter XXXI, para. 27, and Chapter XXXIII, para. 108.

(*vi*) It should be provided that a majority of the Board should consist of non-official members, and that the Board should always include at least three representatives of Hindu and at least three of Muslim interests. Subject to these provisos, the Board should include: (*a*) a salaried President, appointed by Government; (*b*) the Director of Public Instruction, *ex-officio*; (*c*) a member elected by the non-official members of the Bengal Legislative Council; (*d*) five representatives appointed by the University of Calcutta and two by the University of Dacca; (*e*) from five to eight members appointed by Government among whom should be included (if Chapter XXXI, paras. 22-23. *Ibid*, para. 21

not otherwise provided for) representatives of the needs of industry, commerce, agriculture, medicine and public health, secondary and intermediate education, the educational needs of girls and those of the domiciled community.

hapter XXI, aras. 31-39.

(*vii*) The powers of the Board should be: (*a*) to define the various curricula to be followed in high schools and intermediate colleges; (*b*) to conduct the two secondary school examinations described above, subject to the proviso that the universities should in each case have the power to determine what forms of the intermediate college examination they would accept, and under what conditions, as qualifying for admission to their courses in various faculties; (*c*) to grant, after inspection, formal recognition to high schools and intermediate colleges as qualified to present candidates for the high school or the intermediate college examinations, and as adequately organised and equipped places of instruction; (*d*) to advise Government as to the needs of these grades of education, and as to the best modes of expending the available funds for these purposes. In the opinion of the majority of the Commission it is essential for the adequate performance of the functions of the Board that it should have an inspectorial staff of its own and that it should exercise substantial executive powers, especially in regard to the distribution of grants to schools and intermediate colleges (within the limits of the allotments made for these purposes by Government in its annual budget), and in regard to the exercise of control over such high schools and intermediate colleges as may be maintained out of public funds.

hapter XXI ara. 16.

(*viii*) The Board thus organised, with its President, should not be wholly separated from the Department of Public Instruction, but should be regarded as an important branch or aspect of the whole system of educational organisation, closely linked with the other branches, especially through the Director of Public Instruction. The character of the Director's office would thus be materially changed. He would be

relieved of much detailed work, but he would become chief of the staff and expert adviser to the Member or Minister in charge of Education, and would himself be in touch with all the aspects of educational work. To express this important change in the functions of the Director we recommend that he should be given the position of a secretary to Government.

(*ix*) In order to give unity to the educational system by reducing the existing cleavage between Government schools and colleges and privately managed schools, and by facilitating an interchange of teachers among these institutions, the main body of the teaching staff of the Government schools and intermediate colleges should be gradually reorganised upon a professional rather than a service basis, the fullest safeguards being taken to protect the actual or prospective rights of members of the existing services, and to ensure an adequate salary scale and reasonable security of tenure under the new system. At the same time a superannuation fund for teachers should be organised to replace the existing pension system for future recruits to the profession. To this superannuation fund all aided schools should be required, and all recognised but unaided schools should be encouraged, to contribute. Chapter XXXI, paras. 85-9

(*x*) In view of the need of enlisting the services of a number of western-trained teachers in the reorganisation of secondary and intermediate work in Bengal, a special corps of western-trained teachers should be organised, the members of which should be enlisted not on uniform graded rates of pay, but on such terms and conditions as might be necessary to secure the right types of men and women in each case. Their services should be available, under the direction of the Board, either in Government institutions, or in private institutions which expressed a desire for their services. Chapter XXXI, paras. 99-1

General recommendations regarding university work.

4. Although an effective reorganisation of secondary and intermediate education would greatly improve the quality of university

work, by improving the quality of the students entering the University, and by withdrawing for more appropriate treatment very large numbers of students who are unready for university methods of instruction, this would not of itself remove the grave evils which now exist; the university system of Bengal is, in our judgment, fundamentally defective in almost every aspect, and, in so far as it does good work, does it in spite of the method of organisation now in vogue.

5. The defects of the system, which we have analysed in detail in the earlier part of this report, affect primarily the students following courses in the Faculties of Arts and Science, who number about eleven out of every thirteen of the total. These defects may be briefly summarised as follows: (*a*) The numbers are too great to be efficiently dealt with by a single university organisation; and this will remain true even if the intermediate students (two-thirds of the whole number) are withdrawn. (*b*) The undergraduate courses of instruction in arts and science are given by colleges which are almost entirely self-contained and in many cases widely scattered, and generally too meagrely staffed and equipped to be able to do justice to their students; some of them being wholly, and most of them mainly, dependent upon the fees paid by the students—a source of income wholly inadequate for the purpose. Even in Calcutta, where there are many colleges, there is no efficient co-operation. (*c*) The courses of instruction are too predominantly literary in character and too little varied to suit various needs; nor is there adequate provision for training in technical subjects. At the same time, the methods of instruction are far too mechanical, depending mainly upon mass-lectures, and giving a quite insufficient place to individual guidance and advice, nor do they allow for variation of method to meet the needs of different students. This is due in part to the enormous numbers which have to be dealt with; in part to the influence of a bad tradition; but mainly, perhaps, to the fact that since the University is (in regard to undergraduate work) almost exclusively an examining body, external to the colleges, the colleges tend to regard themselves as mere coaching institutions, and the influence of the examinations exercises an undue domination over the minds of teachers and students alike. (*d*) The great majority of the teachers are gravely underpaid, and have no legal security of tenure and next to no freedom in their work, while most of them have no prospect

apters II XIII.

apter XIII, as. 7-16.

apter II, ras. 44-56.

apter VII, ras. 9-37.

apter II, ras. 38-43,

of attaining to positions of dignity and importance, such as would form a stimulus to good work; the result is, that the profession of a college teacher has no prestige and attracts few men of the highest ability. (*e*) While the University has recently undertaken the direct control of almost the whole of the post-graduate work for the degrees of M.A. and M.Sc., and has brought about considerable improvements in this regard, there is, because of this division, an unhappy cleavage between the higher and lower teaching work of the University and its colleges, which has led to some friction, and has tended to the impoverishment of undergraduate work. (*f*) The system of government and administration of the University is unsatisfactory and ineffective as an instrument for the encouragement of learning; and the relations between the University on the one hand and the colleges on the other are of such a kind that, while there is no really effective means of securing the efficiency of the colleges, yet they are under an unduly rigid control which restricts their freedom of action and makes it difficult for them to show any independent initiative. (*g*) The University is loaded with administrative functions, particularly in regard to the recognition of schools, which it cannot adequately perform, and which bring it into difficult relations with the educational organisation of the State. (*h*) The relations between Government and the University are of an unsatisfactory kind, involving far too much detailed Government intervention which cannot be satisfactorily exercised and which undermines the sense of responsibility of the university authorities; while the peculiar relation between the University of Calcutta and the Imperial and provincial Governments adds an element of complexity and confusion which is not found in the other Indian universities. (*i*) The regulations which govern the work of the University are unduly rigid and difficult to modify. (*j*) Despite consistent efforts and large expenditure during recent years, the conditions under which many of the students live are such as must be deleterious to their health, morals, and work; and there is a lack of that corporate spirit which constitutes one of the most educative factors in university life. (*k*) Finally, owing to the practice which has been followed ever since the foundation of the Indian universities of treating university qualifications as the sole formal credentials for public employment—a practice which has been insensibly extended so that even minor clerkships

and Chapter XIII, paras. 31-36

Chapter X

Chapter XXVII.

Chapter XIII, paras. 37-42

Chapters X and XXVI paras. 50-55

Chapter XXVIII, paras. 1-8.

Ibid, paras. 9-17

Ibid, paras. 54-57.

Chapter XIX

Chapter XXVIII, paras. 117-149.

are in a large degree filled on this basis—too many of the students think of their university course not as a thing worth pursuing for itself, or as a training for life, but simply as a means of obtaining admission to careers for which, in many cases, no university training ought to be required.

6. One of the essential and most efficient remedies for the evils described in the foregoing paragraph is the creation of new universities, wherein the teaching function can be assured of its due predominance. To this end we recommend the organisation of the teaching resources which exist in the city of Calcutta in such a way as to create a real teaching university; we recommend that the project of a university at Dacca should be carried into effect at the earliest possible moment; and we also recommend the adoption of a mode of organisation for the mufassal colleges which will encourage the gradual rise of new university centres by the concentration of resources for higher teaching at a few points. But before we turn to these proposals it will be convenient to set forth certain general recommendations affecting all the university organisations alike, Calcutta, Dacca, and the future or 'potential' universities of Bengal.

Chapter XXXIV.

Chapter XXXIII.

Chapter XXXV.

7. The following recommendations are applicable to all universities which may now or in the future be created in Bengal:—

(*vi*) The Governor-General and the Government of India should cease to stand in the special relationship which they at present occupy in relation to the University of Calcutta. The Imperial Legislative Council should retain responsibility for all legislation affecting the fundamental Acts of universities; and the Governor-General should assume the office of Visitor of the Universities of Calcutta and Dacca and of any future universities which may in future be created in Bengal performing (with the aid of a special organisation for university work) the functions of visitation, of advice in regard to the co-ordination of effort with the universities of other provinces, of giving encouragement and assistance to research, and of affording help in the recruitment of teachers. We venture to suggest that it would be advantageous if these visitorial functions were similarly exercised over all the universities of British India.

Chapter L, paras. 2–4

Ibid., paras. 3–55

(*xii*) The Governor of Bengal should be Chancellor of the Universities of Calcutta and Dacca, and of any future universities in Bengal, performing functions in many respects different from those now assumed by the Chancellor: these functions are more fully defined in Chapters XXXIII, XXXVII and L. Chapters XXXIII, XXXVII, para. 20 and L, paras. 17-20.

(*xiii*) The Government of Bengal should take the place of the Government of India in all ordinary dealings between the State and the universities in Bengal; though the functions of Government in this regard should be in many respects different from what they now are, and in particular, should involve much less detailed interference in academic affairs than is now the case. Chapter XXXIII, Chapter XXXVII and Chapter L, para. 9-15.

(*xiv*) The regulations governing the work of the universities should be made less rigid, and should be classified in accordance with the character of their subject-matter. The classification which we recommend is as follows: (*a*) The *Act*, made and alterable only by the Imperial Legislative Council; (*b*) the *Statutes*, made in the first instance (as a schedule to the Act) by the Imperial Legislative Council, but subsequently capable of being altered or added to by the Court of the University, subject to the approval of the Government of Bengal; (*c*) the *Ordinances*, made by the Executive Council of the University, subject to ratification by the Court, the Chancellor having the right of veto; (*d*) the *Regulations*, made by appropriate bodies in the University to which such powers are entrusted by Statute or Ordinance. Chapter XXXVII, paras. 12-17 and Chapter XXXIII, para. 66.

(*xv*) Honours courses, distinct from the outset from pass courses, should be instituted in the universities in order to make provision for the needs of abler students; and the pass courses should be arranged in coherent groups of subjects. Facilities should be afforded for change from pass to honours courses and *vice versâ*. Chapter XXXIV, paras. 35-43.

(*xvi*) The duration of the degree course should be three years after the intermediate stage; this provision being applied immediately in regard to honours courses, and at an early date in pass courses. In appropriate cases Chapter XXXIV, paras. 29-34.

honours graduates should be permitted to proceed to the degree of M. A. one year after taking their degree.

Chapter XXXIII, para. 89. Chapter XXXIV, paras. 101-105.

(*xvii*) The titles of professor and reader should be strictly reserved for persons upon whom these titles are conferred by a university, and who are in receipt of a minimum salary, to be defined.

Chapter XXXIII, para. 90. Chapter XXXIV, paras. 112-120.

(*xviii*) Appointments to professorships and readerships should be made by special selection committees including external experts; and, in order that there may be in each university a certain number of western-trained teachers of these ranks, a defined number of professorships and readerships in each university should be appointed on the nomination of selection committees acting in England, but including representatives named by the University.

Chapter L, paras. 141-142.

(*xix*) Small Civil Service Commissions should be appointed in connexion with the Government of India and the Provincial Government. The duties of these Commissions should be (*a*) to define the stage of educational attainment which should be required in the case of various groups of posts under Government; (*b*) to conduct competitive tests among qualified candidates for such vacancies as may be announced, under such conditions as may be defined; (*c*) to approve all appointments made by direct nomination in cases where this method of appointment is held to be desirable.

Chapters XIX and XXXIX, paras. 136-144.

(*xx*) In view of the necessity for paying greater attention to the health and physical welfare of students, a director of physical training, holding the rank and salary of a professor, should be appointed in each university; and a Board of Students' Welfare, including medical representatives, should be one of the standing boards or committees of each university. Responsibility for the supervision of the conditions of students' residence should be assigned to the appropriate authorities.

Chapter XLIX.

(*xxi*) Having regard to the comparatively backward condition of the Muslim community in regard to education, every reasonable means should be taken to encourage Muslim students, and to safeguard their interests. We have

held this need always in view, and our numerous and important recommendations to this end are summarised in a special chapter.

Recommendations relating to the University of Dacca.

8. The establishment at Dacca of a new university of the teaching and residential type was promised by the Government of India in 1912, and an elaborate scheme for its organisation has been published. Even if no such undertaking had ever been given, we should have recommended the establishment of a teaching university at Dacca, as a means of relieving the pressure on Calcutta, and of introducing, under favourable circumstances, new methods of university organisation. The importance of the city of Dacca as the second town in Bengal and the centre of Eastern Bengal, as well as the number and variety of its educational institutions, render it a favourable site for an experiment of this order. Chapter XXXIII, paras. 1-1; *Ibid*, paras. 15-16.

9. While we recognise the great value of the original report of the Dacca University Committee, which set before India, for the first time in a clear form, the ideal of a residential and teaching university, we think that for the sake of economy and simplicity of organisation it is desirable to depart from some of the main features of the scheme embodied in the report. In particular we think that the conditions now existing, and the changes suggested in other parts of our scheme of reform (notably the system of intermediate colleges), render it desirable to depart from three features of the original scheme: (*a*) the organisation of the University as a purely governmental institution; (*b*) the organisation of the University upon a collegiate basis; and (*c*) the staffing of the University almost wholly by means of service appointments. Nor do we think it desirable that separate and distinct provision should be made for the needs of the well-to-do classes, as proposed in the original report. And we have not thought it necessary to follow the Dacca University Committee in defining in detail the courses to be followed, since this seems to us to be an essential function of the new academic bodies when constituted. Chapter XXXIII, esp paras 19 and 1

10. We hold it to be of great importance that the new University at Dacca should be set on foot at the earliest possible date; and for that reason, we should advocate its establishment even if it be not found possible at once to provide all the additional

equipment required. Our recommendations in regard to Dacca are as follows:—

(*xxii*) The University of Dacca should be established as a unitary teaching university, wherein all formal instruction given in the name of the University should be given by officers of the University and under the direct control of the university authorities, no collegiate organisation being interposed between these authorities and the students.

(*xxiii*) The principal authorities of the University should be:—(*a*) the Visitor (the Governor-General of India); (*b*) the Chancellor (the Governor of Bengal); (*c*) a full-time salaried Vice-Chancellor; (*d*) a widely representative Court, including *ex-officio*, elected and nominated members; the Court should have the power of making Statutes, of approving the financial policy of the University, and of generally reviewing its work, and, since so large a body could not meet frequently, it should elect a Committee of Reference to represent it in dealing with the Executive Council; (*e*) a small Executive Council, with substantial powers of control over finance and the general policy of the University and with power to make Ordinances; (*f*) an Academic Council including the principal teachers of the University, and having large independent powers in all purely academic questions affecting courses of study, examinations and degrees; (*g*) Faculties, Boards of Studies and other statutory Boards.

(*xxiv*) Government should make to the University a stated annual block-grant, leaving to the university authorities (subject to annual audit) the responsibility for expending these funds in the most economical way, and for raising, by private contributions or otherwise, such additional funds as may be necessary. An estimate of the amount required for this annual grant will be found in Chapter LI.

(*xxv*) The teaching staff of the University should ultimately be appointed by the University itself acting through selection committees which should include (in the case of the more important posts) external experts

appointed by the Chancellor; a certain number of defined posts being filled after nomination by a selection committee acting in England, on which the University should be represented. This system can only gradually be brought into operation; and in the first instance it will be necessary to provide the most complete safeguards for the rights, actual and prospective, of the existing members of the Educational Services engaged in educational work in Bengal. For this reason the initial appointments should be made by the Government of Bengal, with the advice of the Vice-Chancellor and the Director of Public Instruction. Minimum salaries should be defined for each class of posts; but the authorities of the University should be free to define the actual salary to be offered in each case above this minimum. The fulfilment of the contracts of appointment should be guaranteed by Government, the guarantee being readily enforcible owing to the fact that the University will be in the main dependent upon Government grants.

(*xxvi*) The teaching work of the University should be organised in departments, each under the responsible charge of a principal teacher, who should usually be a professor, though in some minor subjects he might be a reader. The head of the department should be responsible for the general organisation of the work in his subjects, including tutorial guidance. The details of the departments which seem to us to be necessary at the outset will be found in Chapter XXXIII. Chapter XXXIII, paras. 91-96. *Ibid*, para. 92.

(*xxvii*) The University should be a residential university, not in the sense that all students should be required to live in halls or hostels which are under university control, but in the sense that the majority of the students will need to have such residences provided for them, that the provision and conduct of these residences will be systematically organised, under the direction of the University, and that the residential units will be utilised for the development of social life. The residences should be arranged in large units to be known as halls, each presided over by a senior member Chapter XXXIII paras. 135-159.

of the staff to be known as the Provost, and sub-divided into houses, each in charge of a tutor and assistant-tutors drawn from the teaching staff of the University. Room should also be found for smaller residential units provided by private agency with the approval of the University; these should be known as hostels, and each should be in the charge of a Warden.

(*xxviii*) In order to meet the needs of the Muslim community, which is numerically preponderant in Eastern Bengal, a special department of Islamic studies should be organised, leading up to a degree, and forming the culmination of the reformed madrassah course, in accordance with the scheme laid down by the Dacca University Committee. In order that this branch of study may be placed on a parity with other courses, the first two years of it (corresponding to the intermediate course in arts or science) should be conducted by the Dacca Madrassah, which should for this purpose be organised on the lines of an intermediate college.

(*xxix*) There should be a strong representation of Muslim interests upon all the governing bodies and the principal boards and committees of the University; there should also be a Muslim Advisory Committee; and one of the halls should be specially organised for Muslim students.

Recommendations for the establishment of a teaching university in Calcutta.

11. It is in our judgment essential that the teaching resources existing in the city of Calcutta should be so reorganised as to ensure that the best available teaching shall be open to all students, so far as accommodation and time-tables permit. It is impossible, in Calcutta, to effect this on the lines of a unitary university such as we have proposed to establish in Dacca, because the numbers to be dealt with are too large, while the colleges, many of which have done valuable work during a long period, cannot be disregarded. What is needed is a new synthesis between the University in its teaching aspect, and those colleges which are sufficiently well-equipped to be capable of taking part in a system of co-operative teaching. We have considered a number of alternative schemes for the solution of this difficult problem; and while we have been

unable to accept any of these in full, we have found many sugges- Chapter XXXIV, tions in them. To carry into effect the reorganisation which is paras. 8-23 required a complete reconstruction of the system of university government will be necessary. It will also be necessary that the colleges should abandon the ideal of being self-contained and self-sufficient, to which the existing system has tempted them to cling, and should be prepared to co-operate with one another and with the University; that new and more effectual means should be devised for enabling the University to exercise a due control over the quality and character of the teaching given in its name, without impairing the freedom of good colleges; and that, in the system as a whole there should be a great increase of elasticity, such as will enable the colleges to pay due regard to the varying needs of their students.

12. In order that the synthesis between the University and its Chapter XXXIV. colleges may be made effective, many changes in the present system will be necessary. (*a*) Those colleges which are to take part in a co-operative system must be more adequately staffed and equipped than they now are; and in order to make this unmistakably clear, it will be necessary to classify the colleges in such a way as to admit to the privileges of the co-operative system only those colleges which are able to make a real contribution to it. This distinction will be more fully developed later. (*b*) The colleges which are fit to take part in a co-operative system, and only these, must, as such, be directly and effectively represented upon the academic bodies of the University, which ought to consist largely of members of the teaching staffs of such colleges. (*c*) The University, thus reconstituted, ought to be in a position to ensure, more fully than is now possible, that the teaching given in its name is of adequate quality, while at the same time the colleges ought to retain control over, and responsibility for, the appointment of their own teachers. (*d*) The colleges ought to have greater freedom than they now enjoy in arranging and directing the work of their students, partly by having a larger voice in the definition of curricula, but still more by being free to determine, within defined limits, how much formal instruction, and of what kinds, their students should receive; and they should enjoy this freedom in regard to pass, honours and post-graduate students. (*e*) The colleges ought to take their share in post-graduate work, and the University ought to take its share in undergraduate work; and the instruction

of the best teachers in the University and in all the colleges (to which the majority of the university teachers should be attached) should be made available so far as practicable for students from all the colleges. (*f*) The University ought to be responsible for facilitating this, by arranging for the best college teachers to give lectures which will be open to all the students, and by issuing lists of such lectures; while the colleges ought to be responsible for advising their students how far they should resort to these lectures, how far to ordinary college lectures, and how far they should utilise other forms of college instruction in small classes, etc. (*g*) In addition to providing lecture instruction, the colleges should be made responsible for giving individual guidance and advice to students on a far more adequate scale than is now usual, and for ensuring that their students reside in proper conditions and have reasonable opportunities for physical training and recreation and for social intercourse. In short we desire a new synthesis between the work of the University and the work of the colleges, a synthesis in which the colleges could not dominate the University nor the University dominate the colleges, as if the former were a separate organisation. This would not be the case, because the University would be fully representative of all academic interests and every aspect of academic life.

13. Some colleges in Calcutta will at first be incapable of taking part in such a co-operative system as we have wrought out. For these colleges temporary provision on something like the existing basis will be necessary, until they shall have been enabled—we hope with both public and private assistance—to bring themselves up to the requisite standard. Provision will also have to be made for the needs of mufassal colleges, a problem which is separately dealt with below. But all these needs have to be kept in view in devising the new organisation, and especially in dealing with the critical and vitally important period of reconstruction, which will certainly cover a period of several years. Our recommendations in regard to the Teaching University of Calcutta are briefly set out below; but the problem is so complex that here, even more than elsewhere, it is necessary to note that our scheme of reform can only be fully understood by reference to the chapters (especially XXXIV and XXXVII) in which it is worked out in detail. Any brief summary is liable to be misleading.

14. With these provisos, our recommendations for the organisation of a teaching university in Calcutta may be summarised as follows :—

(*xxx*) The system of governance of the University should be reconstructed; and in future the authorities of the University of Calcutta should be :— Chapter XXXVII.

(*a*) the *Visitor* (the Governor-General of India) Para. 18.

(*b*) the *Chancellor* (the Governor of Bengal) Para. 20.

(*c*) A salaried full-time *Vice-Chancellor* with the pay and status of a High Court judge. Para. 21

(*d*) A *Treasurer*. Para. 22.

(*e*) A widely representative *Court*, including *ex-officio* and elected members, and a small number of nominated members. The Court under our scheme would have several hundred members, and be representative of every important educational interest in Bengal. It would (1) make Statutes and ratify Ordinances, (2) review the work of the University, (3) approve the financial estimates. As a body so large could not often meet, it should elect a *Committee of Reference*, to act on behalf of the Court, in sundry matters. Paras. 26

(*f*) A small *Executive Council* of 17 members which should be responsible for the financial and administrative management of the University, and should have power to make Ordinances. Paras. 39

(*g*) An *Academic Council* of 80 to 100 members, including representatives of all constituent colleges, and of all grades of teachers, which should be responsible for regulating the teaching work of the University, and in general for purely academic questions. Paras. 4

(*h*) Faculties, Boards of Studies, Committees on Courses, a Board of Examinations, a Board of Students' Welfare, and other standing Boards and Committees (including the Mufassal Board and the Board of Women's Education separately referred to below). Paras. 58-71 and 76-88

(*xxxi*) The University should be organised primarily as a teaching university, consisting of incorporated and constituent colleges: the incorporated colleges being

institutions owned and managed by the University itself, the constituent colleges being distinct corporations enjoying full membership of the University, fulfilling defined conditions, performing defined functions and enjoying defined privileges. The affiliating functions of the University (in regard to temporarily affiliated colleges in Calcutta, and to mufassal colleges) should be regarded as subsidiary, and of a more or less temporary order,

(*xxxii*) The conditions of admission to the rank and privileges of a constituent college should be laid down by Statute, and should define (*a*) the number of students such a college may admit; (*b*) the number of teachers to be provided in proportion to the number of students; (*c*) the minimum rates of pay and conditions of service to be provided by the college for its teachers; (*d*) the conditions to be observed by the college regarding the residence of students; (*e*) the minimum accommodation and equipment (including libraries and laboratories) to be provided in the subjects in which the college had recognised teachers; (*f*) the method of administration of the college; (*g*) the conditions under which teachers appointed by a college should be subsequently approved by the University, and the extent to which such approval should be required, provided always that the college should have control over appointments to its own staff. The colleges admitted to constituent rank should be named in a Statute, any alteration of which would require the assent of the Government of Bengal.

(*xxxiii*) Colleges admitted to constituent rank should enjoy the following privileges:—(*a*) they should each be directly represented upon the Academic Council; (*b*) their students (undergraduate and post-graduate) should be entitled to attend university and inter-collegiate lectures without payment of special fees; (*c*) their 'recognised' teachers should be eligible for appointment as university professors, readers, lecturers and examiners without leaving their colleges, and for membership of all academic bodies; (*d*) they should have full

control over the discipline of their students, and (subject to general regulations) over the amount and type of instruction to be received by them.

(*xxxiv*) In the proposed system of co-operative instruction the functions of the University should be (*a*) to define the curricula of studies; (*b*) to provide for the use of teachers and students libraries, laboratories and other equipment necessary to supplement those of the colleges, as well as lecture-rooms at headquarters; (*c*) to provide teachers especially in subjects not taught by the colleges —teachers in subjects of college instruction, whether for undergraduate or post-graduate work, being normally provided in conjunction with a college or colleges; (*d*) to 'appoint' college teachers to give in addition to their ordinary college work courses of instruction (both undergraduate and post-graduate) which will be open to the whole University, and to make payment for such courses; (*e*) to 'recognise' college teachers whose work is confined to the colleges. Once recognised, no teacher should require fresh recognition for work of the same grade even if he leaves his college. The University should define the minimum qualifications which it will normally accept for teachers working as junior assistants, or as college lecturers respectively. All college teachers should be submitted for recognition immediately after their appointment by the college, and recognition should only be refused on the express ground that the candidate was not qualified for the work proposed to be allotted to him. A denial of recognition by the University should not invalidate the appointment of a college teacher; but if at any time the number of unrecognised teachers employed by a college should reach one-fourth of the total, this should be regarded as justifying a withdrawal of its privileges from the college, and the matter should be laid before the Court with a view to an amendment of the Statute conferring constituent privileges upon the college. Chapter XXXIV, paras. 86-100.

(*xxxv*) In the proposed system of co-operative instruction the functions of the college should be (*a*) to direct the studies of their students, both undergraduate and Chapter XXXIV, paras. 53-60.

post-graduate, and the courses they are to pursue, subject to any general regulations laid down by the University; (*b*) to decide what, if any, university or inter-collegiate lectures they shall individually attend; (*c*) to provide such courses of lectures, special classes, and other forms of instruction as in the judgment of the college authorities may be required by their students; (*d*) to provide for every student individual guidance and advice in his studies; (*e*) to certify to the University that every student before submitting to examination has undergone a systematic course of instruction in all his subjects, or to withhold such certificate where necessary; (*f*) to provide the necessary teaching equipment in the subjects in which it undertakes to give instruction; (*g*) to supervise the residence, health and discipline of their students. The colleges should enjoy freedom and responsibility in performing these functions, and in particular in appointing its staff. The staff of a college might under this system include teachers of three grades:—(*a*) college teachers who are also 'appointed' teachers of the University, partly paid by the University, and some of whose lectures are open to the whole University; (*b*) college teachers who are 'recognised' teachers of the University, but whose instruction (except by special arrangement) is open only to students of the college; (*c*) unrecognised teachers, who should be few in number.

(*xxxvi*) Presidency College, which has always been the principal and the best equipped centre of teaching in the University, should continue to play this part but its resources should be so far as possible made available to the University as a whole. Hitherto Presidency College has represented the principal contribution of Government to collegiate education in arts and science for men students in Calcutta. In order that Presidency College may freely play its part in the new system, along with other constituent colleges, and in order that this aspect of the financial responsibility of Government for university education may be clearly defined, the college should be reorganised under the direction

of a governing body appointed by Government, and including also representatives of the University and of the college teachers. The governing body should be allotted a stated annual block-grant at least equal to the total present expenditure on the college, and should (subject to annual audit) be free to expend this revenue, together with any other sources of revenue which might accrue from fees, subscriptions or endowments, at its discretion. It should (subject to the fullest safeguards for the existing and prospective rights of members of the Educational Services) be free to make appointments to vacancies in the teaching staff without reference to service rules, under such conditions as might be defined by Government at the time of transfer, and in accordance with the regulations of the University; but at least ten chairs, to be held by teachers of the college, to be known as Presidency Chairs, and to carry all the dignity and privileges of professorships in the University, should be reserved for western-trained scholars, and should be filled after nomination by a Selection Committee acting in England; part of the instruction offered by the holders of these chairs being open to the whole University. paras. 107-109.

(*xxxvii*) Appointments to professorships, readerships and lectureships in the University should in every case be made with the aid of a specially appointed committee of selection, which should, in the case of professorships and readerships, include three external experts nominated by the Chancellor. In all cases in which a professorship or readership is associated with a particular college, or in which the college provides a part or the whole of the emoluments of the post, the college should be represented on the Committee of Selection, and should have the power to veto any particular appointment. With this exception all appointments to teaching posts in a constituent college should be in the hands of the college, the University reserving the power to give or withhold recognition. Chapter XXXIV, paras. 112-120.

Chapter XXXIV, paras. 141-151.

(*xxxviii*) Colleges which are unable to fulfil the conditions laid down for admission to constituent rank, but whose continued maintenance is necessary for the accommodation of students, should be granted, on defined conditions, the privileges of temporary affiliation for a period of five years, in order to give them an opportunity of satisfying the conditions for constituent rank. Such colleges should not be directly represented upon the governing bodies of the University; their students should not be eligible to attend lectures given by university teachers or approved teachers in the constituent colleges, except by special arrangement and on payment of a fee; their teachers should not, as such, be eligible as members of university bodies, or be recognised as university teachers, or be appointed as examiners. The affairs of colleges in this group should be controlled by a special committee reporting to the Executive Council, on which the colleges should not be represented, though they would have a right to be heard.

Chapter LI, paras. 39-44.

(*xxxix*) It is necessary to afford financial assistance to colleges in order to enable them to fulfil the condition of admission to constituent rank. It is also necessary to establish at an early date new arts colleges, notably an Islamia College for Muslim students, to which university chairs or readerships in Arabic, Persian and Islamic history should be attached, and an orthodox Hindu college, based upon the degree department of the Sanskrit College, to which university chairs or readerships in Sanskrit and Pali should be attached.

Para. 45.

Chapter XXXIV, para 99.

(*xl*) All colleges should be inspected at intervals of not more than three years, and a single general inspection report should be circulated.

Chapter XXXIV, para 140.

(*xli*) All applications to Government for additional assistance made by or on behalf of the University itself or any of its colleges, whether incorporated, constituent or temporarily affiliated, should normally be forwarded through the Executive Council (or Commission) at a fixed time of year, and the Executive Council in forwarding them

should be empowered to append its own comments and recommendations.

(*xlii*) In view of the great difficulties attending a simultaneous transplantation of institutions so numerous as those connected with Calcutta University, and the certainty that unless all were transplanted, the co-operative system of teaching would be rendered impracticable, and in view of the impossibility of leaving a city of the size of Calcutta without a university organisation at its centre, we consider that the attractive proposal to remove the University to a rural or suburban site must be abandoned. The centre of the teaching and administrative work of the University should continue to be in the College Square area, where the administrative and teaching centres of the colleges should also be as far as possible concentrated. But land should be acquired in the suburbs for residential purposes and for playing fields; and the whole problem of the sites of educational buildings in Calcutta and its district should be carefully planned and worked out in conjunction with the Calcutta Improvement Trust and the Corporation. Chapters X and XXXVIII.

(*xliii*) In order to safeguard the interests of the Muslim community, there should be representatives of Muslim interests upon the principal governing bodies, boards and committees in the University; the particulars of this representation will be found in Chapter XXXVII. We also recommend the establishment of a Muslim Advisory Board with power to address any constituted body of the University upon any question affecting the interests of Muslim students. Chapters V, XLIX and XXXVII.

(*xliv*) For the determination of any dispute between any college or university teacher and the appointing authority regarding the fulfilment of the teacher's contract on appointment, the University should appoint a tribunal, by whose decision both parties should be bound to abide. Chapter XXXVII, para. 89.

(*xlv*) Any college or community or group of teachers who feel themselves aggrieved should have a right of appeal to the Chancellor, who should have power to appoint a small impartial commission of enquiry. Chapter XXXVII, para. 10. Chapter L, para. 20.

(*xlvi*) The scheme of reorganisation defined in the foregoing clauses involves far-reaching and complex changes. The new governing bodies proposed to be established cannot be immediately organised until the classification of colleges is determined, and until the rearrangements necessitated by the system of intermediate colleges have been carried into effect. It is therefore essential that during the period of reconstruction there should be a small Executive Commission with exceptional powers. The arrangements which will be necessary during the period of reconstruction will be further discussed at the end of this chapter.

Recommendations regarding mufassal colleges.

15. The problem of dealing with the scattered colleges in the mufassal is a very difficult one. It is impossible for them, in their present condition and with their existing resources, to give to their students a training which would deserve to be described as university education. At present, moreover, these colleges suffer from lack of direct contact with the work of the University. Few of them have representatives upon the governing bodies of the University, and these few only by accident. They have therefore no share in the responsibility for framing the courses of study which they pursue, nor can they adapt themselves to the needs of their districts. These colleges will be deeply affected by the main features of our proposals; on the one hand by the manifestly superior training which will be obtainable when strong teaching universities are established in Calcutta and Dacca; on the other hand by the withdrawal of all the intermediate students on whose fees their existence largely depends. It would be excessively costly, and indeed impossible, to bring them all up to such a point of efficiency in respect of staff and equipment as would turn them into true university centres. On the other hand, it would be a disaster if, for these reasons, the whole body of mufassal degree students were drawn into Calcutta and Dacca.

16. We are satisfied that some form of special treatment is necessary for the mufassal colleges. We have discarded one proposal having this end in view the proposal that a new University of Bengal should be forthwith established. We believe that the best solution will ultimately be that by a judicious concentration

of resources a few of these colleges should be encouraged and helped gradually to develope into more highly organised and semi-independent institutions, and ultimately, perhaps, into distinct universities; while others should become intermediate colleges. But we think that this change should not be unduly forced, and that some form of organisation ought to be created which, while rendering possible the development that seems to us most desirable, would not exclude other possible solutions.

17. Our recommendations in regard to mufassal colleges, which are more fully set forth and argued in Chapters XXXV and XXXVII, are as follows:—

(*xlvii*) The mufassal colleges should, for the present, remain in association with the University of Calcutta, and the direction of their affairs should be entrusted to a special Board of Mufassal Colleges, upon which every mufassal college teaching up to the degree level should be represented, while, in order to ensure equivalence of standards, there should be a substantial representation of the Teaching University, and the Academic Council should be consulted upon all proposals affecting degree courses. Chapter XXXV, paras. 32-37. Chapter XXXVII, paras. 76-82.

(*xlviii*) In order to encourage the growth of the stronger colleges which may be capable of becoming potential universities, such colleges should, on fulfilling certain defined conditions, receive the title and rank of 'University Colleges,' and should then be specially represented upon a special panel of the Board, and empowered, with the assent of the special panel and of the Academic Council, to exercise a certain degree of autonomy in the framing of their courses and the conduct of their examinations. Chapter XXXV, paras. 45-51. Chapter XXXVII, para. 81 (*vi*).

(*xlix*) Additional funds will be necessary for the development of the university colleges. Such funds as may be available for this purpose should be expended by Government after report from the Executive Council (or Commission) of the University. All applications for additional assistance made to Government by or on behalf of mufassal colleges should be forwarded through the Executive Council (or Commission), which should, in forwarding them, be empowered to make Chapter XXXV, paras. 44, 50. Chapter XXXVII, para. 81 (*viii*). Chapter L, paras. 12-13.

its own recommendations and suggestions, and might ask for a report from the Board of Mufassal Colleges.

Recommendations regarding the education of women.

apter XIV. 18. We have been deeply impressed by the very great importance of encouraging a more rapid development of women's education in Bengal, by the social difficulties with which this problem is surrounded, and by the extremely slight progress which has hitherto been made. But we are of opinion that, owing to the directness with which it touches deep social issues, this problem ought to be dealt with by bodies especially conversant with the needs and interests involved.

19. Our recommendations regarding the education of women and girls are as follows :—

apter XXVI, ras. 10-11. (*l*) There should be a standing committee of the Board of Secondary and Intermediate Education to deal with the education of girls, such committee to include women and to be empowered to consult bodies consisting of women only, in which *purdah* women could take a part.

apters IV and XXVI, ra. 4. (*li*) An attempt should be made to organise *purdah* schools for Hindu and Muslim girls whose parents are willing to extend their education to 15 or 16.

apter XXVI, ra. 12. (*lii*) In view of the small number of women candidates for university courses, the intermediate classes should not be separated from the degree colleges for women.

(*liii*) We realise that an increasing number of women students will require the most advanced teaching that the University can provide. We hold, therefore, as a matter of principle, that women should be admitted as far as possible to the instruction provided or organised by the University. But we recognise that in the special circumstances existing in Bengal, the main provision for women's higher education must be made in distinct institutions and under special direction.

apter XXVI ras. 15-17. apter XXVII, ras. 85. (*liv*) A special Board of Women's Education should be established in Calcutta University, and should be empowered to propose special courses of study more particularly suited for women, and to organise co-operative arrangements for teaching in the women's colleges, more partic-

ularly for the training of teachers and in preparation for medical courses.

(*lv*) Relations should be established between this Board and the Governing Body of the Lady Hardinge Medical College for Women at Delhi. Chapter XXXVI, para. 22.

Recommendations regarding the Government Educational Services.

20. In exploring the condition of secondary and university education in Bengal our attention has necessarily been much engaged by the working of the educational services. We have found that the service system had in the past a great deal to recommend it, notably the security of its tenure, the comparative adequacy of the salaries which it offered, the prestige which attached to it, and the convenience which it often displayed in enabling the exiguous available teaching force to be used at the points where it was most needed. We have found, also, that the system has attracted many able and devoted men to the service of education, and has obtained a very strong hold over the minds of Indian teachers, who in a multitude of cases prefer work under service conditions to any other kind of teaching work. But our survey has convinced us that the disadvantage of a service organised on the existing basis go far under present conditions to outweigh its advantages. The system is in some respects marked by undue rigidity. The distinctions between its grades arouse irritation, and sometimes lead to unintentional injustices. It makes a sharp and in many ways unfortunate cleavage between those who are employed in Government schools and colleges, and the much larger and rapidly increasing number of teachers who are engaged in private schools and colleges. It gives rise to administrative inconveniences, and from this point of view has been condemned by many leading members of the Educational Services themselves, and by several Directors of Public Instruction. We have been convinced that the time is at hand when the service system of recruitment for educational work should be gradually abandoned, or be so transformed in character that the continued use of the term 'services' would be misleading; and that the organisation of teaching work should be on a professional basis rather than on a service basis. But this should be done by gradual stages, and with every possible safeguard for the rights, present and prospective, of existing members of the services in all grades. The general character

Chapter XIII, paras. 20-28.

Chapter XXXI, paras. 85-89.

Chapter XXVIII, paras. 93-116.

Chapter L paras. 21-30.

of our recommendations will already be apparent from earlier paragraphs, and notably from the recommendations numbered (*ix*), (*x*), (*xxvi*) and (*xxxvii*) above; they are also analysed in Chapter L of this report. But it may be convenient here to summarise these changes in a single view, on the ground of the importance of the departure which we propose should be gradually made.

hapter L, ras. 21-). See ote by r. Zia-ud- n Ahmad d Dr. regory, ras. -34.

(*lvi*) In regard to the secondary and higher secondary branches of education we think that the ultimate establishment of a professional organisation of the main teaching body in all schools under the direction of the Board should be aimed at from the outset; teachers being free to transfer their services from private to Government schools or *vice versâ*, and being all participants in a general system of superannuation, managed by the Board. We recommend that reasonable conditions as to the salary and tenure of all teachers should be exacted by the Board from all schools under its jurisdiction.

apter XXI, ras. -08. apter L, ras. -30.

apter XXI, ras. 105. apter L, ra. 30.

(*lvii*) In view of the need of western-trained teachers in these grades of education, we have recommended the recruitment of a special corps of teachers, who would be employed and paid by Government (through the Board) and would enjoy full security and pension rights. This 'corps' may be regarded as a modified service, but with two differences: (*a*) that there would be no fixed or invariable hierarchy of grades; and (*b*) that the work of the teachers so employed would not be limited to Government institutions.

apter XIII, as. 59. apter XIV, as. 164; apter L, ra. 24.

(*lviii*) For university work we consider the service system to be unsuitable, especially in its present form; and we have recommended that in the new University of Dacca, in Presidency College, and in other Government colleges engaged in university work, appointments should in future be made not by the Secretary of State or by the local Government, but by the governing bodies of the universities and colleges concerned. At the same time we have suggested safeguards against abuse (*a*) by providing for a special form of selection committee; (*b*) by providing that in the case of certain listed posts

which it is desirable to fill with western-trained scholars of distinction, nominations should be made by special selection committees in England, on which the University and the college (where a college is affected) would be represented; and (*c*) by the recommendation that Government should guarantee the salary and pensions or superannuation allowances attached to these posts. Chapter XXXIV, paras. 168-169.

(*lix*) Our recommendations in this regard do not apply to the administrative educational services. Chapter XXXI, para. 96 and Chapter L, para. 22.

The comparative advantages of a Government service of teachers and of an organised teaching profession.

21. In view of the great importance of the issues which are involved in this question, it will be convenient that we should here state more fully the chief reasons which lead the majority of us to regard a professional rather than a service organisation of teachers as being, on the whole and ultimately, the better adapted to the needs of a comprehensive system of education.

22. The teaching profession is not one of those which can be allowed to rely solely on fees paid by the public for professional services. Under such an arrangement sound education cannot be rendered accessible to all at a sufficiently low fee; still less could it be made gratuitous at any of its stages. The action, in some form or other, of the State is indispensable. The State, for the common good, must subsidise the work of teaching. This necessarily raises the question what kind and degree of control over the teachers the granting of State subsidies should involve. Should this control be exerted directly or indirectly, *i.e.*, by subsidising a profession or by making teachers members of the Government service, or by both methods concurrently?

23. Government service for the teaching profession has many administrative advantages. It provides cadres of appointment, well-defined increments of salary, a pension system, rules of leave, a convenient subordination of ranks, and opportunities for disciplinary control. By some, the status of Government employment is highly valued; perhaps by more, the security of tenure which such service generally implies.

24. On the other hand a teacher's duties are only in a minor degree administrative. For this reason the methods of transfer and of promotion which in the administrative services on the whole work well are much less well adjusted to the needs of colleges and schools. In an administrative service, length of official experience is such an important factor in each individual officer's efficiency that the advantages of promotion by seniority generally outweigh its disadvantages, provided that the rule is elastic enough to allow for making occasional exceptions. In teaching, on the other hand, length of experience is as a rule much less important relatively than personal characteristics and individual gift. For this reason, to select a candidate from a number of applicants in view of his special fitness for a particular post in a particular school is in this case generally a more suitable method of appointment than is promotion by seniority in a cadre of a graded service. In an administrative service the head of a department, though he may be at a distance, can usually judge with comparative certainty whether the transfer of an officer from one post to another will be advantageous to the service as a whole. But in the case of the transfer of a teacher, it is the domestic conditions and internal efficiency of each of the two institutions concerned which have principally to be borne in mind. And of such matters no authority at a distance can feel with confidence that it is fully informed.

25. In the second place, Government service for teachers, if organised upon a basis which covers the whole of a country, conflicts with what should be the responsible freedom of local authorities and of the governing bodies of endowed schools (if the latter are brought within the scope of the system) in making appointments to the staffs of the schools under their care. The system tends to officialise education and to centralise its organisation. But every good school should desire to cultivate special characteristics and to preserve the good traditions of its corporate life. Such distinctiveness and individuality among schools must increase in proportion to the degree in which the school system adapts itself to the varied preferences of the people which it serves. These characteristic differences between schools call for a method of appointment which allows the members of the appointing body which has intimate knowledge of the needs of the institution concerned, to select (subject to conditions laid down by public authority with regard to professional qualifications) the applicant

whom they deem to be the best adapted to the circumstances of the particular school.

26. In the third place, privately managed schools, however efficient, are put to disadvantage by the system, because their field of choice is restricted by so large a proportion of qualified teachers being confined to schools under Government management. Government service for teachers, unless it covers the whole field of education, tends to divide the body of teachers into two groups—those in Government schools and those in privately managed schools. Such a division entails some risk to the unity of national education. It is possible to allow on approved conditions selected privately managed institutions to avail themselves, whether at the expense of Government or at their own expense, of teachers who have been appointed and are paid by Government. But many difficulties are inherent in such an arrangement, except when (as is the case in one of our own recommendations) the plan is introduced on a subsidiary scale.

27. In the fourth place, as teaching is an art rather than a business, and as the highest functions of a teacher are scholarly and pastoral rather than administrative, the conditions of employment best adapted to such a calling are those which allow the greatest freedom to individual initiative and self-expression. These conditions are found in a professional organisation rather than in a service directly administered by Government. But education is so closely implicated with public interests as well as with private conviction that the community, or the Government acting in its behalf, cannot dispense with the right of exercising supervision over the qualifications which each entrant into the profession should be required to possess. We believe therefore that the whole body of teachers should *ultimately* be organised by charter as a profession, with a registration council (representing the various bodies and grades of teachers and, in India, both Hindu and Muslim teachers) to regulate the conditions of entrance, to grant admission, and to frame and enforce rules of professional conduct. In view of the public interests involved, the sanction of Government should be required to the conditions proposed for admission to the profession and to any statutes or regulations of major importance which the registration council might think expedient to adopt.

28. We conceive that, under such a form of organisation, professional *esprit de corps* would be combined with an effective degree

of public control; that the unity of national education would be promoted, with due regard to the different qualifications required for service in its various grades; that primary, secondary, technical and university education would each gain by having its representatives upon a council common to the whole profession and discussing its affairs; that the study of the science and art of education would be promoted by the enforcement of such study as a condition of admission to the profession; and that the teachers' calling as a whole would acquire greater dignity and public consideration and thus become more attractive to men and women of ability and promise.

Recommendations regarding the training of teachers.

tors and II.

29. A serious deficiency in the numbers of well-qualified teachers is the fundamental weakness in the system of secondary and intermediate education. It is also the cause of an enormous waste of money and of time. There is urgent need in Bengal for many thousands of well trained teachers, equipped with a sound knowledge of what they have to teach and with a clear comprehension of the aims and methods of a good school. In particular, the methods of class teaching are at fault; and the corporate life of the schools is inadequately developed for the formation of character. If the teaching were improved, the school life of the average high school boy could be shortened by two years.[1] The amount which parents in Bengal would save by this economy alone would be not less than 15 lakhs of rupees a year, a sum which would be a substantial contribution towards the cost of the reform of secondary and intermediate education in the Presidency. In addition to this, improved methods of class teaching in the schools would enable parents to avoid in almost every case the cost of providing private tuition for their sons. The amount of this saving we cannot estimate, but it would be very large. And these economies would accompany an actual advance in the attainments of the boys and a material improvement in their mental vigour and physique. The systematic reform of secondary and intermediate education in Bengal will be greatly reduced by these savings on school fees and on private tuition, apart altogether from the intellectual and physical

[1] The average age of candidates for matriculation is now nearly 18½ years. With better teaching it should be 16½ years or lower.

advantage which it would incidentally secure. One indispensable condition of this reform (another aspect of which is a material improvement in the pay and prospects of the teaching profession) is the better professional training of teachers. In this work the Government and the universities should co-operate.

30. The recommendations which we put forward with a view to meeting these requirements are as follows :—

(*lx*) Seven hundred trained teachers should be sent annually into the secondary and higher secondary institutions. Many of these would be employed in the intermediate colleges. The Universities of Calcutta and Dacca should each furnish annually 100 trained graduate teachers. The remaining five hundred should, after passing the intermediate examination, be trained in training colleges established by Government. Chapter XLIII, para. 39.

(*lxi*) At each of the two Universities there should be a department of education under a professor of education assisted by an adequate staff. Under the direction of the professor there should be a training college, to which should be attached a large practising school and also a small demonstration school; the first to accustom the students in training to the methods which should be used in every good school under normal conditions of work; the second, to provide opportunity for educational experiments and for the trial of new methods and courses of instruction. The course of training should in all cases include a prolonged course of practice in teaching. One of the principal aims of these university departments should be to train teachers in the methods of teaching languages (especially English and the mother tongue) and science. They should also (in association with other departments of the University) be the centres of investigation in educational subjects and for the training of advanced students of the principles and history of education. Chapter XLIII, paras. 10-10.

(*lxii*) Education should be included as a subject (*a*) in one of the courses of study at intermediate colleges, and (*b*) in some of the groups approved for the pass B.A. degree. The professor of education should be held generally responsible for the origination of schemes of study in Chapter XXXII, paras. 30 40. Chapter XXXIV, para. 43.

apter III, as. 38.

education in the pass degree course and also in the course for the degree of bachelor of teaching. The latter should usually be taken as a second degree, after a course of training extending over one year subsequent to the B.A. or B.Sc. But students who have taken the intermediate courses (including education as one subject) and have subsequently served for two years on the staff of a recognised school should be allowed to proceed direct to the B.T. degree after taking an approved course of instruction, extending over three years, partly in the university departments of arts or science, partly at a training college. For these and other students taking the professional courses for teachers bursaries should be provided on a liberal scale.

d, a. 37.

or in

apter III, a. 38.

(*lxiii*) Any student who has taken the B.T. degree should be allowed to present himself for the examination for the M.A. after a course of instruction extending over two years. The principles and the history of education should be added to the list of subjects in which a candidate may present himself for the M.A. degree.

(*lxiv*) The departments of education in the Universities of Calcutta and Dacca should arrange courses of public lectures on educational subjects in these cities and at other centres in Bengal.

Recommendations regarding oriental studies.

31. The systematic development and encouragement of oriental studies is one of the most natural and important functions of an oriental university. But this function has hitherto not been performed in a satisfactory way, partly because the primary function of university work has always hitherto been held to be the development of western learning, and partly because there has been a dislocation of aim between the studies carried on in the University and its colleges, theoretically in accord with western methods, and the traditional studies in the oriental classical tongues which are carried on in the *tôls* (for Sanskrit) and in the madrassahs (for Islamic subjects). The history of these organisations and their relations with the system of western training form a very complex and difficult subject, which is fully investigated in Chapter XVI. In

apter XVI.

the result, while in the Sanskrit College and the *tôls*, and (until recently) in the madrassahs, the purely traditional learning was pursued, the attempts made in the University and its colleges to apply western methods to the study of these subjects has been unsatisfactory. A very substantial advance has been made in the last few years in the higher branches of these subjects (especially Sanskrit and early Indian history); but the work of the colleges, and the training given to the mass of students, still remains far from satisfactory. Chapters XV and XVI.

32. At the same time, in spite of the emphasis laid by Government ever since the time of Macaulay upon the importance of serious study and systematic development of the vernaculars, the study of the mother tongue has been gravely neglected alike in the schools, in the colleges, and in the University; the demand of vernacular knowledge made upon the students being of the most inadequate and perfunctory character. The results of this have been unhappy, since it has involved a neglect of any proper development of the student's natural medium of thought. Chapter III, para. 10. Chapter XIII, para. 73. Chapter XVIII, *passim*. Chapter XVI, paras. 28-32.

33. We consider it to be important (*a*) that the purely oriental and traditional studies should continue to be pursued in the Sanskrit College and the Madrassah, but that neither these studies, as traditionally pursued, nor the University, would profit by any attempt to bring them under direct university control; they ought to remain distinctly organised; (*b*) that the development both of the oriental classics and of the vernaculars should receive more systematic attention than has hitherto been given to them and that for this purpose university students ought to have access to the learning of the distinguished *pandits* of the Sanskrit College and *maulvis* of the Madrassah, in so far as these are ready and able to help them. Some arrangement is therefore necessary whereby the centres of traditional oriental studies, while remaining distinct and undisturbed, should yet be brought into relation with the universities, while at the same time oriental studies on more modern lines are also cultivated in the universities. An arrangement of this kind seems to be practicable, though, owing to existing differences of organisation, there would have to be some variation of treatment in regard to Sanskritic Studies on the one hand, and Islamic studies on the other.

34. Our recommendations for dealing with this difficult problem are as follows:—

(*lxv*) The Sanskrit College, Calcutta, should be reorganised in three sections: (*a*) a high school and intermediate college which would take over the work of the present intermediate classes, as well as the 'high' classes of the high school course, but would throughout lay special emphasis upon Sanskrit; (*b*) a constituent college of the Teaching University, arranged to accommodate, say, 500 students; to this college should be attached the university chair of Sanskrit and the chair or readership in Pali, and its students should profit by the instruction of the *pandits* in the neighbouring *tôl* department; this college would naturally be the principal centre of teaching in an honours school of Sanskrit; (*c*) a *tôl* department which would work, as now, in connexion with the Sanskrit Association and have no direct connexion with the University. These three institutions should be housed in separate buildings side by side, on the site of the existing Sanskrit College and the Hindu School; the library should be available for the use of all three. They should have distinct governing bodies, which would be in relation, respectively, with the Board of Secondary and Intermediate Education, with the University and with the Sanskrit Association; but care should be taken to ensure that there were common elements in all three governing bodies.

(*lxvi*) Students of the *tôl* department of the Sanskrit College, if they pass the title examination, and are adequately qualified in English, should be encouraged to pursue their studies in western aspects of their subjects without going through the high school and intermediate course; and for this purpose the University should institute a diploma, or possibly a degree, for such students, the course of study for which should include such subjects as comparative philology and archæology.

(*lxvii*) In regard to higher Islamic studies, we have already recommended that a department of Islamic studies

giving in the first instance a degree of B. I. should be organised in the University of Dacca on the lines defined by the original Dacca University Committee, as the culmination of the reformed madrassah course, and that the first two years of the proposed course should be conducted in the Dacca Madrassah, and possibly also in one or two other madrassahs; we have further suggested that an alternative or modified course (including elementary science, and more nearly approximating to the proposed courses of the intermediate colleges, while still retaining essential Islamic studies), might be gradually introduced in these madrassahs, and might lead up to a degree of B. A. in Islamic studies, treated on modern lines. Chapter XLII, paras. 12-25.

(*lxviii*) The Anglo-Persian department of the Calcutta Madrassah should be organised as a distinct high school and intermediate college. Chapter XLII, para. 16.

(*lxix*) In Calcutta we have recommended the establishment of an Islamia College as a constituent college of the Teaching University; to this college chairs or readerships of Arabic, Persian and Islamic history should be attached, and it should become the chief centre of instruction for an honours course in Arabic and Persian. For the purposes of this work, the co-operation of eminent *maulvis* from the Calcutta Madrassah should be invited, and courses given by them either in the Madrassah or in the Islamia College should be recognised by the University for these purposes. Chapter XXXIV, paras. 174-176. Chapter XLII, paras. 17-18.

(*lxx*) Students following the traditional course in Calcutta should be encouraged, without leaving the Madrassah, to take up, after passing the senior madrassah examination, special courses for a diploma, or possibly a degree, instituted by the University. Part of the instruction for this might be given in the Islamia College. Chapter XLII, paras. 27-28.

(*lxxi*) With a view to encouraging a more serious and scientific study of the vernaculars chairs or readerships in Bengali, Urdu and other vernaculars should be established in the University; and the literature and philology of the vernaculars should be introduced among the subjects Chapter XLII, paras. 9-11.

which students are permitted to offer both for pass and for honours degrees.

Recommendations regarding professional and vocational training.

35. We have been deeply impressed by the general disregard among university students in Bengal of the possibility of finding careers in practical—professional and technical—work, other than law and (to a less extent) medicine; by the deficiency of opportunities for obtaining training for such careers, and by the consequent overcrowding of courses of purely literary study. This disregard has its roots in historical and social facts which especially affect the classes from which the bulk of the students are drawn. But it must be amended; and any scheme of educational reform which does not place in the forefront the need for such an amendment must fall short of the country's needs.

Chapter II.

36. The strong hold which the University and its courses possess upon the minds of the educated classes in Bengal has led to the suggestion that if only the University offers degree courses and examinations in practical and technical subjects the prejudice against careers of this type will be overcome. There is something to be said for this view, and undoubtedly action ought to be taken by the universities, and will have a useful influence upon opinion. But in this sphere even more than in others, it is training above all which is needed, and as training is costly and demands elaborate equipment in nearly all vocational subjects, no course of study should be defined until there is a responsible assurance that the necessary provision of teaching and equipment is forthcoming. And unfortunate results may follow, and the whole movement towards practical careers suffer a check, if men are turned out in large numbers with an equipment of a kind for which there is very little demand. There is a real danger in the idea that, if an examination is provided and a degree course defined, all that is necessary is done.

Chapter XVI, paras. 31-39 and 44-68.

37. But the provision of courses of study by the University, even on the most adequate scale, is not enough. Degree courses in technical and professional subjects, other than those for the established professions of medicine and law, are required by a comparatively restricted number of persons even in highly industrialised countries. The highly trained scientific experts whom the industries of a country can absorb—and it is only with the training of such that a university should be concerned—

must always be relatively few in numbers. On the other hand, industry, especially in a country where it is just entering upon a period of expansion, needs a very large number of men who are intelligent and educated, and whose training has given them some introduction to the sciences at the base of their calling, but who cannot be called scientific experts. The need for such men is probably the greatest need of to-day in Bengal; though the others also are needed. And from this point of view the system of intermediate colleges with their varied courses—each with some vocational bias though still general in character—must be of very great value. They will be of value also in providing students with a more efficient preliminary training, not only for technical courses of study, but also for the older professional courses. They represent, in short, the essential foundation of a new and sounder system of training. Chapter XXXII, paras. 31-47

Law.

38. The system of training in law is of recent institution, and seems to be working well. Nor can it be said that there is such a paucity of lawyers in Bengal as to make it urgent that measures should be taken to increase the supply. In this field, therefore, we have few changes to suggest. Chapter XXII.

(*lxxii*) In order to ensure a more adequate treatment of the more purely academic branches of legal studies, the Tagore Chair of Law (hitherto devoted to special lectures) should be used to secure the services of a permanent professor in jurisprudence or Roman law; and it would be desirable that other full-time chairs or lectureships should be established if funds become available. Chapter XLV, para. 6.

(*lxxiii*) The course for the degree of B. L. should remain a post-graduate course extending over three years. Students should be permitted, during the course of study for a degree in law, simultaneously to undertake a course in another Faculty. But special care should be taken to exact the full measure of work in both Faculties. Chapter XLV, para. 7.

(*lxxiv*) The existing Law College at Dacca should be developed into a distinct faculty of law, organised as a department of the Dacca University. The Faculty should inlcude at least one high court judge together with representatives of other branches of the profession Chapter XXXIII, paras. 110-114.

and in order to enable these members to be present at its meetings, it should be empowered to meet, when necessary, in Calcutta.

Medicine.

Chapter XXIII.

39. The system of medical training provides for two classes of students, those who aim at a university degree, and who are provided for in two colleges, one Government and one private (both in Calcutta) and those who aim only at the licence granted by the State Medical Faculty of Bengal, and are given a shorter and less elaborate course in institutions attached to hospitals at Calcutta and Dacca, and known as medical schools. The demand for admission to the medical colleges and the degree courses is greater than the accommodation. On the other hand, the existing need in Bengal is greatest for medical men who will be willing to practise in the rural districts, which experience shows that graduates are reluctant to do. The provision made for medical training in the Calcutta Medical College seems to us to be sound, though hampered by various difficulties and by the lack of organised teaching in various special subjects. The medical schools also (which are wholly unconnected with the University) are doing useful work, but the course is rather a slight one in some respects, and the gap between the two branches of the profession is too great. We do not however suggest any immediate changes in this regard. Our recommendations regarding medical training (in so far as it is affected by our general proposals) are as follows:—

Chapter XLIV, para. 45.

(*lxxv*) The Calcutta Medical College, and also (if it is able to fulfil the conditions) the Belgachia Medical College, should become constituent colleges of the Teaching University.

Chapter XLIV, paras. 5-7.

Chapter XXXII, paras. 31-32.

(*lxxvi*) The standard of entrance to the Medical Faculty, as to other Faculties, should in future be that of the proposed intermediate college examination, one form of which should be adapted to the needs of medical students, though entrance should not be restricted to students who have taken the examination in this form.

Chapter XLIV, paras. 4-17.

(*lxxvii*) Training in the preliminary sciences (physics, chemistry, botany and zoology) should be provided as soon as possible elsewhere than in the medical colleges. It may be found possible to afford a sufficient training in selected

intermediate colleges. But this could not meet the whole need, and provision should be made in these subjects by the University of Calcutta and its constituent colleges.

(*lxxviii*) Preliminary scientific training for women medical students should be made, if possible, by co-operation among the women's arts colleges, and the scheme of training should hold in view the requirements of the Lady Hardinge Medical College for Women at Delhi, as well as those of the Calcutta University. Chapter XXXVI, paras. 22-23.

(*lxxix*) The Principal of the Calcutta Medical College should be paid a salary sufficient to exempt him from the necessity of undertaking private practice. Chapter XLIV, para. 41.

(*lxxx*) A well equipped department of public health should be established in the Calcutta Medical College. Professorships should be created in this college in (*a*) pharmacology, (*b*) mental diseases, (*c*) dermatology, and syphilology, (*d*) diseases of the ear, nose and throat; and lectureships in (*e*) X-rays and (*f*) electro-therapy. There should also be a chair of the history of medicine; this might be a chair in the University. Chapter XLIV, paras. 18-32.

(*lxxxi*) In view of the absence of organised and systematic training in dentistry, it is desirable that a department or school of dentistry should be established as soon as possible in the Bengal College of Medicine. Chapter XLIV, para. 33.

(*lxxxii*) A medical college at Dacca, preparing students for degrees in medicine, should be established in due course, when adequate arrangements can be made. Chapter XXXIII, paras. 115-122.

(*lxxxiii*) A much needed expansion of medical training of the type given in the medical schools would be facilitated by the use of some of the intermediate colleges to provide the necessary training in the preliminary sciences. Chapter XLIV, paras. 46-52. Chapter XXXII, paras. 31-32.

Engineering.

40. The training of skilled engineers is one of the most important services which the universities have to render in an industrial society; and in view of the coming development of Indian industries it is to-day more important than ever. The Civil Engineering College, Sibpur, has hitherto devoted itself mainly to the production of civil engineers; but if industrial development proceeds Chapter XXIV.

apace, there is likely to be a large and growing demand for mechanical engineers. One of the chief obstacles in the way of this work has hitherto been the aversion of students of the *bhadralok* classes from any avocation involving manual work; and in this sphere the Engineering College has in fact hitherto confined itself to training men for subordinate branches of the profession, and has made no attempt to provide training of a university level. During sixty years the Engineering College has done good work in difficult circumstances; but in the judgment of the Indian Industrial Commission, as in our own, the time has come for a reconsideration of its range, methods and organisation. Our recommendations on this head necessarily overlap those of the Indian Industrial Commission and the Public Works Department Reorganisation Committee, with which they should be compared. We add certain recommendations regarding the kindred subjects of mining and architecture.

Chapter XLVI, paras. 43-71.

(*lxxxiv*) The Civil Engineering College, Sibpur, should be a constituent college of the University of Calcutta, and should be placed under the direction of a governing body created by charter. The governing body should include representatives of Government, of the teaching body of the college, of the engineering profession, and of the industrial interests concerned. It should receive a stated annual allocation from Government, and should, subject to audit, be allowed wide latitude in expending this grant, and in obtaining funds from private sources, especially from the industrial interests served by the college. It should have power to make appointments to the staff and to control the curricula of the college.

Chapter XLVI, paras. 33-34.

(*lxxxv*) The college should gradually devote itself wholly to higher or university work, and the lower or technical classes now accommodated in it should be provided for elsewhere.

Chapter XLVI, paras. 16-25.

(*lxxxvi*) Training up to the degree standard in mechanical engineering should be given at Sibpur, and the necessary additions to the staff and equipment of the college should be provided for. Training up to the same standard in electrical engineering might also be provided later.

Mining.

(*lxxxvii*) The course of study in mining should be maintained and extended at Sibpur. Chapter XLVI, paras. 26-32.

Architecture.

(*lxxxviii*) In view of the absence of organised provision for training in architecture, it is desirable that a scheme of training in this subject, which might lead up to a degree, should be organised in Calcutta. This could probably best be done at Sibpur, possibly with the co-operation of the School of Art. Chapter XLVI, paras. 35-40.

Agriculture.

41. In spite of the supreme importance of agriculture as the predominant economic interest of Bengal, there has hitherto been no attempt to provide organised instruction in agriculture of a university grade. Government has maintained a number of experimental farms in the Presidency; the agricultural college at Sabour was designed to serve the needs of Bengal as well as Bihar, though, under the terms of the Patna University Act, it is precluded from having any connexion with the University of Calcutta. The methods of cultivation and of land-tenure prevalent in Bengal do not lend themselves to any considerable employment of highly qualified scientific experts, such as university graduates in agriculture ought to be. The kind of training for which there is a widespread need is of a more elementary kind, and is such as we hope may be afforded in the agricultural course we have proposed as an element in some of the intermediate colleges. Nevertheless we are convinced that there is need for the service of a limited number of highly trained men, and that it is the duty of the University to provide them. But since the number of posts likely to be available will for a long time to come be very small, and since a man trained as an agricultural expert is apt to be regarded as of no use for any other purpose, we feel that the greatest care should be taken (*a*) not to admit more than a reasonable number of students, and (*b*) to provide for them a scheme of training which would fit them for other cognate occupations should a purely agricultural calling not be available. Chapter XXV

Chapter XXXII, paras. 34-35.

42. Our recommendations on this head are as follows :—

Chapter XLVII. paras. 1, 3-5.

(*lxxxix*) There should be a department or school of agriculture in the University of Calcutta, organised at first on modest lines, and making use so far as possible of existing resources. It should have attached to it a demonstration and experimental farm in the neighbourhood of the city. It should work in close relations with the Government Institute of Agriculture which it is proposed to establish.

Chapter XLVII, paras. 2-8.

(*xc*) If and when provision has been made for teaching in Calcutta, for an experimental farm, and for opportunities of practical training at the proposed institute, the University should establish a degree course suitable for the training of scientific agricultural experts. The first three years of this course should lead up to a special form of the B. Sc. degree. Thus qualified the student should be admitted for a period of one or two years' practical work in the proposed Government Institute of Agriculture; after which, if his work was certified as satisfactory, he should be eligible for the degree of Bachelor of Agriculture.

Chapter XLVII, para. 9.

(*xci*) Until the opportunities of suitable employment expand, provision should be made only for a small number of students.

Chapter XXXII, paras. 34-35.

(*xcii*) A more elementary introduction to agricultural science, suitable for zamindars' agents, teachers in agricultural districts, officers of co-operative societies, etc., should be given in selected intermediate colleges.

Technological sciences.

Chapters XXVI and XLVIII

43. We regard it as an important and indeed a necessary function of a university, situated in a great industrial and commercial city like Calcutta, to include applied science and technology in its courses and to recognise their systematic and practical study by degrees and diplomas. This function must not be confused with that of training foremen and other servants of the scientific industries. The latter is the business of technical institutions of another grade, with the work of which the courses of the University should be so far as is necessary correlated. For example, the University of

Calcutta, in the development of its courses of training in applied science, should co-operate with the proposed Calcutta Technological Institute, especially in the use of workshops for the practical training of the students. We hope that private benefactors and the industries concerned will give generous help to the University of Calcutta in its new technological departments, which should not be started until the means of providing adequate courses of scientific and practical instruction are assured. In view of the great expense of providing these courses and of the comparatively small number of scientific experts whom the industries of India are for the present likely to absorb, care should be taken to avoid any wasteful multiplication of institutions giving technological training in the same branch of industry. In this branch of education there should be a division of labour according to the industrial needs of the different provinces of India. While therefore independent action on the part of each university should be welcomed when private liberality enables it to develope this side of its work in the interest of the district which it immediately serves; and while the provincial Government should be free to develope technological training for the assistance of any industry which it regards as important or promising; the Government of India should have an organisation (as is proposed by the Indian Industrial Commission) for giving guidance and advice in this matter from an all-India standpoint, and should administer funds out of which it may give special grants-in-aid to advanced technological training and research at the universities and elsewhere. The Government of India will thus be in a position to exert considerable influence in securing concerted action among the universities in regard to technological training. Chapter L, paras. 46-49.

44. Our further recommendations are as follows:—

(*xciii*) Calcutta is a suitable centre for the advanced training of students to meet the needs of the leather industries, the chemical industries (including dyeing), the oil and fat industries and some branches of the textile industries. In several of these departments, the work of the university technological laboratories should be associated with that of the Engineering College at Sibpur. So far as possible, the university departments of technology and applied science should be placed in the neighbourhood of the University College of Science, should be attached Chapter XLVIII, paras. 5-15.

to it administratively and should come under the general supervision of its governing body. To each department of technological study there should be attached an advisory committee which should include leading representatives of the industries concerned. Within defined limits the principal university teachers in the technological departments should be permitted to engage in private practice.

apter VIII, ra. 8.

(*xciv*) At Dacca the intermediate college should provide scientific and practical instruction preparatory to enigneering and agriculture; and the technological research work entrusted to the scientific laboratories of the University should be co-ordinated as far as possible with corresponding investigations conducted in the university laboratories in Calcutta.

apter XXII, ra. 33, apter VIII, ra. 4.

(*xcv*) The reform of the intermediate courses is necessary for the development of a general scheme of technological training; and the new intermediate colleges should therefore be established as quickly as possible, because their work will serve as a foundation for the teaching of applied science at the University.

Commerce.

45. In the training of students for a commercial career the University has a very important but limited function. In all countries the vast majority of those who go into commerce do so at an earlier age than that of graduation at the University. It is at this earlier age therefore that preliminary training for commerce can be most usefully given. For this among other reasons we have recommended the reform of the high schools. Bengal needs modern secondary education. The high school certificate, which a boy will gain after receiving a good general education up to 16 or 17 years of age, will be a valuable credential to those who wish to enter upon commercial life immediately after leaving school. But even more useful as a preparation for business will be the training given at the intermediate colleges. We have recommended that these colleges should provide a practical but not narrowly specialised course which will give an excellent training to young men who intend to enter commercial life at 18 or 19 years of age. In addition to this we propose that there should be classes in commercial subjects at

apter XXI, ras. -70.

apter XXII, ras. -47.

apter VIII, ras. -32.

technical or commercial institutes aided by the Department of Public Instruction and the Department of Industries. Many of these classes should be held in the early morning or in the evening after office hours. Lastly there is need for advanced teaching in banking, insurance, actuarial science and other subjects bearing upon the commercial interests of the country. In this, the University should take an increasingly important part.

46. It is necessary to guard against the idea that a specialised commercial degree course at a university is likely to be found by any large number of students an *open sesame* to well paid and responsible employment by business firms. The ordinary student, after taking as an undergraduate a degree course in commerce, would find himself handicapped by beginning his commercial career some years later. His difficulties would be the greater if he had acquired inappropriate habits of work, and if he resented having to begin at the bottom of the ladder, below many junior to himself in age. A university cannot teach the practical side of business. A degree in commerce does not necessarily connote commercial aptitude. That must be tested and developed in the office and the counting house. And (save in very exceptional cases) this test must be applied under the ordinary conditions of commercial employment. Part-time attendance at an office, however ingeniously dovetailed into a full undergraduate course, cannot be so organised as to provide for any large number of students an all-round, practical training in business methods. Even less practicable would it be for the University to examine the work done by the student in the office of a business house, and to pronounce upon its value as part of the qualification for a degree.

47. Nevertheless the University can give a useful training in the sciences which lie at the basis of commerce. But the students who undertake such a course for their degree must be prepared to recognise the fact that, when at last they enter upon employment in a business house, they will have to start upon the same terms as those offered to youths much younger than themselves and not possessing a university degree. They must face the fact that they will have to trust for their promotion to their own ability and trained capacity, not to the academic title which they possess. For students of a special type a degree course in commerce at the University may be an admirable preparation for a business career. But students of this type are not very numerous.

48. Our further recommendations regarding university courses in commerce are as follows :—

(*xcvi*) The University of Calcutta should have power to institute, when it thinks fit, a Faculty of Economics and Commerce and to confer degrees and diplomas in commercial subjects. An advisory committee on higher commercial education should be attached to the department of economics.

(*xcvii*) The University should be prepared to provide courses of instruction in banking, accountancy, insurance, actuarial science, industrial history, etc., designed especially for students who are already engaged in business, and at hours convenient for their attendance. Admission to these courses should not be limited to persons who have passed the entrance examination of the University.

Medium of instruction.

49. We have analysed the great mass of evidence on the medium of instruction and have shewn that the divergent views expressed cut across the divisions of race, religion, nationality and occupation.

We have dealt with the psychological problems of mind-training involved in the use of the mother tongue and of the English medium and have suggested that the educated public of Bengal, like many other countries within the British dominions and elsewhere, will probably wish to be bilingual. We regard reform both in the teaching of the vernacular, which should be placed on a scientific basis, and in the teaching of English, as essential, and we have made *inter alia* the following recommendations :—

(*xcviii*) The vernacular should be used in general throughout the high schools, except for the teaching of English and of mathematics, which, during the last four years of the course, should be conducted in English.

(*xcix*) At the 'high school examination' (corresponding to the matriculation) candidates should be permitted to answer either in the vernacular or in English, except in the subjects of English and of mathematics in which English should be compulsory.

(*xc*) The medium of instruction and examination in the intermediate colleges and in the University should be English (except in dealing with the vernacular and the classical languages). Chapter para. 25.

(*ci*) Phonetic methods should be employed in the teaching of spoken English and there should be a *viva voce* test in English both at the intermediate college examination, and at the university examinations in that subject. *Ibid*, para

(*cii*) In the University a distinction should be made between the teaching of English for practical and for literary purposes; teaching of both kinds should be available for all students; but a uniform course in English literature should not be a compulsory examination subject for all students in the Faculty of Arts. Chapter XXXIV, paras. 44-46. Chapter XLI, paras. 32-42.

(*ciii*) The scientific study of the vernacular should be encouraged in the University. Chapter XLII, paras. 9-1

(*civ*) To relieve Muslim students from an excessive burden of language study, Musalmans offering Bengali as a vernacular should be permitted to take Urdu in certain examinations in the place of a classical language. Chapters XXXI, XXXII a XXXIII.

Examinations.

50. We have pointed out that the examination system of Calcutta is probably the largest university examination system in the world. In 1918 the University examined nearly 32,000 candidates. Chapters XVII and XL.

51. We have analysed the comprehensive evidence dealing with this system, by which education in Bengal is now dominated. We have pointed out that the university degree is practically the only portal at present to all careers in Bengal and hence that examination reform is a necessary condition for the reform of education. Apparently unimportant details of the examination system profoundly influence the preparation of the students. Thus the mechanical system of marking, devised to secure uniformity of treatment, encourages pure memorisation at the expense of intelligence and tends to the deterioration of mental efficiency throughout the schools and the University. We have suggested that the purpose of the various examinations should be more clearly defined, that the examinations should be both designed and conducted with such purpose clearly in mind. We have made a number of specific recommendations in regard to the conduct of examinations; but

we think that the adaptation of examinations to their purpose and their conduct on rational principles cannot be carried out by mere regulations but must be left to the future university authorities as an important part of their duties. We hope that the Boards of Examination recommended by us will serve as the auditors of the examination system and as the conscience of the universities in this matter; they will publish typical specimens of complete examination answers from time to time and constantly bring before the universities proposals for the removal of defects in the examination system and for the introduction of new and improved methods. We also have hopes that certain subjects may be studied by students without their being required to submit themselves to any examination therein, so that a portion of the curriculum may be entirely freed from examination pressure.

The universities should also welcome at certain of their courses, where accommodation allows, members of the general public qualified to profit by it. Such auditors would be subject to the ordinary university regulations and would pay a suitable fee.

pter XL, as. 3-12.

52. Amongst our recommendations of detail are the following:—

(*cv*) In order to maintain continuous watchfulness upon the methods and use of examinations, to ensure that they are not so mechanically conducted as to exercise a harmful influence upon teaching and study, and to make certain that the purposes with which each examination is devised are held in view, and are fairly realised, there should be in each university a small Board of Examinations, whose functions should not be executive but primarily those of criticism and suggestions.

Transitional measures.

53. The reforms which we have proposed are of a fundamental character, both from the point of view of administration and of education *per se*. We have made it clear that we think the educational reforms which we regard as necessary cannot be carried out without the administrational reforms. But the question may be raised as to whether it is necessary or possible to carry out the whole of the administrational changes simultaneously. In our view, such simultaneous changes are both desirable and feasible, provided that the funds required are available and provided also

that there is a sufficient *personnel* available to carry out the heavy work of the period of transition.

54. The changes fall into three main categories: (1) a change in secondary and higher secondary education, involving the setting up of the Board of Secondary and Intermediate Education; (2) the creation of the University of Dacca; (3) the reconstitution of the Teaching University in Calcutta and the establishment of a new organisation for the mufassal colleges.

55. We have said that these changes could be effected simultaneously, but we do not wish that term to be interpreted too strictly. We have borne in mind that in a large class of legislative measures it is found both convenient and necessary to allow a preparatory period to elapse between the passing of an Act and the 'appointed day' on which it comes into force; and that in the case of a complex measure it may be desirable to make different portions of it come into force on different days; and even to allow of further elasticity by remitting the fixing of such 'appointed days' (within limits defined by the Act) to a specified administrative authority. When we say that the administrative changes should take place simultaneously we mean that they should be authorised by a single Act, or by one or more Acts passed simultaneously, and that the 'appointed days' fixed in or authorised by, those Acts should be reasonably close to one another.

56. We think it possible however that both for financial and for administrative reasons Government might desire the transition to be spread over a longer period than that which we have contemplated, and that we ought therefore to indicate the order in which the three changes proposed should be carried out.

57. We think there can be no reason for delay in setting up the Board of Secondary and Intermediate Education and in making provision for the reform of secondary and intermediate education, which, as we have said repeatedly, we regard as the very pivot of the whole reform.

58. We have also urged that there should be no further delay in creating the University of Dacca. It is unnecessary to advance further arguments on either of these points.

59. But the case of the University of Calcutta is different and more complex. Apart from any financial and administrative difficulties which might be felt by Government in introducing immediate changes, it may be urged with some reason that the

University should not be reconstituted until the new intermediate system comes into working order.

60. But if the Secondary and Intermediate Board and the University of Dacca are created at once, while the reconstitution of the University of Calcutta is postponed, that postponement may take place in three different ways, which would give rise to three very different situations.

(*a*) The legislation for the reconstitution of the University of Calcutta might be postponed purely and simply, the Government of India limiting themselves to a statement of their intentions in regard to university policy. But such postponement could not leave the Universities Act and the constitution of the University of Calcutta entirely untouched; for although the University of Dacca might be created (as was the University of Patna) without direct amendment of the Universities Act, we think some direct amendment would be necessary to provide for the transfer of the power of recognising high schools and intermediate courses from the University of Calcutta to the Board of Secondary and Intermediate Education. Such amendment would probably give rise to immediate difficulties. For it would not be easy to limit the amendment of the Act to this single point. Government would inevitably have pressed on it, with reason, a number of minor amendments; it might find itself involved in controversy on innumerable points of detail; and yet reforms of detail, desirable in themselves, might, if carried out, only block the way to fundamental reform and make the eventual task of the legislature more onerous. Even more serious, perhaps, is another objection. The colleges would find their arrangements upset by the removal of their intermediate students without finding any authority in a position to give them either definite assurances as to their future, or assistance in making the necessary provision for their higher work. Thus there would ensue a trying period of uncertainty and unrest, with few compensating advantages.

We think it clear therefore that the amendment of the Universities Act should not be made piece-meal, but that Government should decide forthwith on its university policy as a whole.

But such a decision would still leave open two plans, (*b*) and (*c*) below, for bringing that policy gradually into operation.

(*b*) The Act reconstituting the University of Calcutta might be passed simultaneously with the legislation bringing into exist-

ence the University of Dacca and the Board of Secondary and Intermediate Education; but the entire operation of the Act other than that relating to secondary and intermediate education might be suspended for some years. This procedure would obviate the disadvantages of piece-meal legislation, and would create a more clearly defined situation. During the period before reconstitution a good deal might no doubt be done by Government and by the University, especially if it had a salaried whole-time Vice-Chancellor, to prepare for the new order of things. But it may be doubted whether the existing organisation could be expected to carry out such preparations with enthusiasm; and we fear that this arrangement would not lighten the labours of the Executive Commission, the appointment of which (though deferred for a time) would ultimately be as necessary as if the University were reconstituted at once.

(c) The third course which we regard as possible would bring the Executive Commission into existence simultaneously with the Board of Secondary and Intermediate Education and the University of Dacca; but the Executive Commission would have more limited powers than those which we have proposed in Chapter XXXVII, and the present Syndicate and Senate would be left to carry on the routine business of the University during a preparatory period. The Executive Commission would negotiate with the colleges in regard to their needs under the new system; it would advise Government in regard to necessary grants for the colleges and for the creation of fresh teaching on the lines indicated in our recommendations; it would deal with the great problems of the residence and health of students and with the provision of sites for hostels; and finally it would advise Government as to the best date for bringing the Act into complete operation. Very soon after that date it ought to be possible for the Commission to transfer its powers completely to the new governing bodies of the University.

61. Like the other schemes for postponement, this scheme would spread the financial liabilities of the Government over a longer period, and would diminish the pressure of the change both upon the administrative officials of Government and upon the Executive Commission itself. The chief objection that we anticipate to the scheme is that there might be friction between the Executive Commission and the older university authorities. But the University Act would necessarily delimit the powers of the Commission

and of those authorities in such a way as to prevent formal clashing; and we hope that in more informal matters friction might be avoided by the presence of the Vice-Chancellor and of other members common to the Executive Commission and to the Syndicate.

Chapter XXXI, paras 29-30.

62. We may point out, that if, contrary to our expectations, the University of Calcutta is reconstituted before the creation of the Board of Secondary and Intermediate Education, it will be necessary to set up within the University provisional machinery to deal with the schools.

63. We desire to make it clear that certain reforms in the University of Calcutta ought not to be postponed whatever scheme be adopted; namely, the provision of further residential accommodation; the provision of a teacher's training department and a department of education; the provision of additional accommodation for teaching; and the provision of measures for supervising and improving the health of the students.

M. E. SADLER, *President.*
ASUTOSH MOOKERJEE
W. W. HORNELL
ZIA-UD-DIN AHMAD
P. J. HARTOG
* J. W. GREGORY
RAMSAY MUIR
} *Members.*

G. ANDERSON, *Secretary.*

CALCUTTA,
The 18th March 1919.

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* Signed subject to the two appended notes.

J. W. G.

We desire to say that the appended notes were submitted in their final form on the day fixed for the final revision of the last two chapters and for the signature of the report. The principles concerned have been fully considered during our sittings, and we think that it will be found that every crucial point raised in the notes is dealt with in some part of the report. While wo do not propose to discuss the details of our colleagues' documents, we must not be regarded as accepting the interpretation placed by them upon various passages of the report to which they refer; nor can we be regarded as accepting the accuracy of the statements made by them.

M. E. SADLER, *President.*
ASUTOSH MOOKERJEE
W. W. HORNELL
P. J. HARTOG
RAMSAY MUIR
} *Members.*

NOTES.

A.—Note by Dr. Zia-ud-Din Ahmad and Dr. J. W. Gregory.

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I.—Introduction.

1. It is with great reluctance that we find ourselves unable to concur entirely with the proposals in the report regarding the administration of higher secondary education in Bengal and with some of the recommendations concerning the reconstitution of Calcutta University. We are glad, however, to concur with the report in what seem to us its essential recommendations, *viz.* :—

(*i*) The transfer of the University from the jurisdiction of the Government of India to that of the Government of Bengal.

(*ii*) The removal of the intermediate classes from the University to the proposed intermediate colleges.

(*iii*) The institution of a Board of Secondary and Intermediate Education.

(*iv*) The establishment, as soon as possible, of a teaching university at Dacca.

(*v*) The reconstitution of Calcutta University as a teaching university with a multi-collegiate organisation.

(*vi*) The administration of the mufassal colleges by a special board which must for a time be connected with Calcutta

University, but should be so organised as to be separable at a later date as one or more independent universities.

(*vii*) The replacement of the constitution of Calcutta University by a constitution including a representative court, an executive council, an academic council and a paid vice-chancellor.

(*viii*) The provision of much larger numbers of trained school teachers.

(*ix*) The improvement of the conditions of student life.

The variations which we recommend from the plan of the report would, we believe, facilitate the reconstitution of the University on the lines it suggests.

2. The improvement of Calcutta University requires in the first place drastic remedies for its overgrown size. Its worst failings are due to its excessive size and too varied functions. It is overloaded with students and duties. The report remarks[1] that it is "in respect of the number of its students the largest university in the world." Its jurisdiction extends over 376,402 square miles with a population of 64½ millions, under the three separate administrations of Bengal, Assam and Burma. It conducts the examinations and supervises the work of 51 colleges[2] with 28,410 students and it 'recognises' and controls the curriculum of 854 high schools, and is thus responsible for the efficiency of 259,815 pupils. It thus has jurisdiction over 288,000 students. In 1918 it held 24 different examinations and examined nearly 32,000 candidates, of whom 14,675 were candidates at matriculation. The University moreover itself provides extensive courses of post-graduate training in law, arts and science. So vast and varied are the duties of the University that, as the report remarks, "under these conditions it is unreasonable to expect that its governing bodies would be able to deal with their immense and complex task in a satisfactory way." The reform of the University requires the reduction and simplification of this task by, among other measures proposed in the report, the removal of the intermediate classes, the early establishment of a university at Dacca, and the administration of the mufassal colleges by a board which

[1] Chapter II, para. 5.

[2] The two newly established colleges at Faridpur and Khulna are not included.

would prepare the way for their separation as one or more independent universities.

3. The reduction of the size of the University might be achieved by restricting the facilities in Bengal for university education; and the view is often expressed that attendance at the University is unduly large in comparison with the requirements of the country and the openings for university men. The bulk of the evidence, however, indicates that the supply of university trained men has not outrun the demand. The problem of university edueation in Bengal is that of improving its quality and not that of reducing the numbers receiving it.

II.—The Board of Secondary and Intermediate Education.

4. To secure the improvement of the high schools and to relieve the University from the burden of their control and examination we agree with our colleagues[1] as to the need for a Board of Secondary and Intermediate Education, which should define the courses of study at the high schools and intermediate colleges, and should be responsible for their examination and 'recognition'; but we doubt the advisability of conferring on this Board such extensive additional executive and administrative powers as are proposed for it.

5. *The proposed powers of the Board.*—According to the report[2] the Board would superintend secondary and higher secondary education, part of technical education, the middle and upper continuation classes, part of preliminary professional training, the professional training of primary and of many secondary teachers, part of the work of the madrassahs and the course of education for girls. It would organise a superannuation system for teachers in all recognised secondary schools, and would also have to provide[3] and manage hostels in all parts of Bengal with accommodation for some thousands of students. To enable it to discharge these various duties it is proposed that the Board should have large funds at its disposal and have the power of allocating substantial grants to private unaided schools. According to Chapter XLIII, the Board is to found and manage a series of training colleges for teachers and may be jointly responsible with the University for the training

[1] Chapter XXXI.
[2] Chapter XXXI, paras. 9 and 10.
[3] Chapter XXXIX, para. 25.

college in Calcutta which is to train teachers for the secondary schools and the degree of bachelor of teaching. These duties represent a heavy burden of work and responsibility for a board of from fifteen to eighteen persons the majority of whom are to be non-officials.

6. The government of the high schools is alone a great task, for in 1916-17 they numbered 698 schools with 224,524 pupils[1] and they are distributed throughout Bengal. Their curriculum, examination, and recognition may be appropriately entrusted to a board of educationalists. But the inspection of the schools and of the proposed intermediate colleges, the distribution of public expenditure on secondary education (including intermediate colleges), the appointment and control of the staffs of the Government high schools and intermediate colleges, the upkeep of the buildings and other administrative duties should, in our opinion, be discharged by the Department of Public Instruction.

7. *The functions of the Department of Public Instruction.*—The work of this department should include the supervision of primary education and of both grades of secondary education, since these three grades overlap. The courses in the primary schools and in the primary sections of the middle and high schools are identical, and the upper classes of the middle schools (lower secondary) are in the main the same as those in the corresponding classes of the high schools. There is no sharp division between either primary and lower secondary or between lower and upper secondary. The one definite educational boundary available is that between the high schools and proposed intermediate colleges on the one side, and the university colleges on the other. The case for the separation of the intermediate classes from the University rests on their work being really school-work and the Government expenditure on all the schools (except technical schools) should, we consider, be administered by the Department of Public Instruction.

8. We have not considered in detail the general administration of the Department of Public Instruction and we make no definite proposals as to the enlargement or reorganisation of that department which might be necessary to enable it to undertake the further duties in connexion with higher secondary education which we consider should be assigned to it. The staff would have to be

[1] Fifth Quinquennial Review of the Progress of Education in Bengal, 1912-13 to 1916-17, by W. W. Hornell, Calcutta, 1918, pages 29-30.

increased, and the department might include three sections each under an assistant director, one to deal with primary education, one with secondary education, and a third with the Government post-intermediate colleges.[1] The establishment of the Government intermediate colleges would add largely to the work of the Department in connexion with secondary education, while it is desirable, as recommended in the report, Chapter XXXI, paragraph 78, that the unaided high schools should be under more effective supervision than they have been in the past. The unaided high schools in 1916-17 included 54·1 *per cent.* of the high schools[2]; they require supervision in the interests of efficient teaching, adequate equipment, sanitary accommodation, fair play to different communities, and the prevention of their use for political propagandism. There is much evidence that among educational institutions the high schools have been the most fertile 'as nurseries of sedition.'[3]

The need for Government control of the high schools is strongly urged by the Bengal District Administration Committee, 1913-14. In their report (1915, page 154) they remark "we consider that the control of Government over all Anglo-vernacular schools [*i.e.* high schools] should be carefully secured." In agreement with this conclusion we consider that all high schools, aided or unaided, which are recognised for any public examination should be periodically inspected by the Department of Public Instruction.

9. The problems of educational administration are at present complicated by the uncertainty occasioned by the Reform Scheme

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[1] In regard to the control of industrial and agricultural education by the Department of Public Instruction, though we recognise the academic advantages of that course, yet, under the existing conditions in Bengal, we agree with the Indian Industrial Commission (Report, 1918, pages 118-19) that the control of industrial and technical training should rest with the Department of Industries, helped by the advice of the Department of Public Instruction; and with the general opinion of the Conference on Agricultural Education held at Simla in June 1917 (see *e.g.*, Chapter XXVIII, para. 42) in favour of the same policy in agricultural training.

[2] Fifth Quinquennial Review of the Progress of Education in Bengal, 1912-13 to 1916-17, by W. W. Hornell, Calcutta, 1918, page 29.

[3] *E.g.* Annual Report of the Director of Public Instruction in Bengal (W. W. Hornell), for 1915-16. Also the Report of 'Bengal District Administration Committee, 1913-14,' pages 147, 154, 157, 158, 159, also pages 4, 5, 10, 29; page 154, para. 186 *a*, page 157. In these passages the responsibility is mainly attached to the Anglo-vernacular schools. This conclusion is reaffirmed by the recent report of the 'Sedition Committee, 1918' page 75, "abundant evidence has compelled us to the conclusion that secondary English schools, and in a less degree the colleges of Bengal have been regarded by the revolutionaries as their most fruitful recruiting centres."

as to the future nature of the Government; but it seems essential that, whatever the type of Government may be, a strong efficient Department of Public Instruction with an expert staff on whose advice the Member or Minister responsible for education could rely, is indispensable. We agree with the report[1] that the Director of Public Instruction should act as Secretary for Education to the Government. If higher secondary education be removed from that Department its authority and influence would be seriously weakened; and its power to help the co-ordination of education would be further reduced by the proposed transfer to special governing bodies of the Government colleges, through which the Department influences post-secondary education.

10. *The relations of the department and board.*—The correlation of the educational system of Bengal is at present inadequate. The coordinating authority is the Department of Public Instruction which has insufficient powers; and the proposed transfer of much of its authority to the new Board would appear conducive neither to efficiency nor economy. The change might seriously delay that more effective coordination of all grades of education which is one of the urgent educational requirements of Bengal. Whether the Board of Secondary and Intermediate Education be endowed with the full powers proposed in the report or with the restricted powers recommended in this note some measure of dual control over higher secondary education will persist; it may have to be tolerated for the present but should be restricted as far as practicable. The division of the functions of the Board into executive as regards curricula, recognition and examination, and into advisory as regards administration would be a natural division which would assign academic questions to the Board and administration to the Department. The risk of the continuance of the existing friction over the recognition of schools between the Department and the Board would be reduced, if, as we recommend, the Director of Public Instruction were the Chairman of the Board, and the Vice-Chairman were also a member of the staff of that Department.

11. The assignment to the Board of the executive powers proposed in the report would not get rid of dual control over secondary education. The Board would expend the Government contributions to higher secondary education; it would manage State-established

[1] Chapter XXXI, para. 16.

hostels, schools and intermediate colleges, and it would have on its staff many Government servants who would be lent to it.[1] Government would inevitably feel responsible for its work and administration. The views of Government would be explained to it by the Director of Public Instruction who could emphasise them by the warning that Government might stop supplies. This drastic course would close schools and colleges and cause educational disorder; so the Member or Minister might hesitate to use his ultimate powers, but he might exercise sufficient pressure on the Board to secure a share of its control. Some branches of higher secondary education would be left with the department, so that responsibility for secondary education would be divided between the Department and the Board. Thus the report recommends that the European secondary schools should continue upon the present lines of organisation.[2] Hence the Department of Public Instruction would continue to deal with them, and probably also with the Calcutta Madrassah, and the *tôls*, part of the work of which is secondary in grade.

12. Over some branches of primary and secondary education dual control would be extended by the new Board. At present administrative control over the primary and middle schools is exercised by the Department; but after the institution of the Board the control over these classes in the primary and middle schools would still be exercised by the Department; but the classes teaching the same courses in the high schools would be under the control of the Board.[3] The determination of primary and lower secondary courses would be partly by the Department and partly by the Board; and if they arranged these courses differently the unity of primary and lower secondary education in the Bengal schools would be impaired. Under the scheme of the report the Department would inspect the middle schools and would manage and appoint the staffs of those owned by Government; but whenever a middle school, by addition of the higher classes, becomes a high school, the whole school would pass to the sphere of the Board; and if a Government middle

[1] Chapter XXXI, paras. 28 and 33.

[2] Chapter XI, para. 16.

[3] In 1916-17 of the 224,524 pupils in the Bengal high schools, 123,819 were in the middle and primary classes (Statistics of British India, Volume V, Education, 1916-17. Calcutta, 1918, pages 35-113) and doing identical or almost identical work with that of the primary and middle schools.

school becomes a high school its staff, according to the plan proposed in Chapter XXXI, Section VIII, would be transferred from Government service to that of the Board.

13. Moreover, owing to the divided control over the middle classes of the schools a double staff of inspectors would be required, one under the Board and one under the Department. And if the senior inspectors were transferred to the Board the inspection of the primary schools would be weakened. These schools are now inspected by a subordinate staff under the supervision of highly trained divisional inspectors, who are required for the inspection of the high schools and would have personally to do most of that at the intermediate colleges. If the divisional inspectors were transferred to the Board, either a duplicate staff would have to be engaged by the Department or the primary schools would lose the benefit of the supervision of the work of the subordinate inspectors by the divisional inspectors.

14. If the service system of staffing the Government high schools be abandoned and appointments are entrusted to the Board, the work thus thrown on it may be heavy and harassing. According to the recommendation in Chapter XXXI, paragraphs 88 and 91, all the teachers in the recognised schools would be eligible for appointment to any vacancy in a Government high school or intermediate college; any such vacancy might lead to a large number of applications from teachers in non-Governmental schools and to personal efforts to influence the members of the Board.

15. In dealing with matters of administration one administrator, aided by a staff of paid officials, is in a better position than a board of fifteen to eighteen with a non-official majority. A board of from fifteen to eighteen persons, who are not paid for their service on it, is not an effective body for the administration of many institutions scattered over a wide area. It may be satisfactory for an institution or corporation the operations of which are confined to a single city or small district; but such a board, if administering institutions distributed over an area as large as Bengal, is apt to be slow and ineffective.

16. *The views of the Muslim community.*—The transfer of the recognition of schools to the Department of Public Instruction is regarded as impracticable on the ground[1] that the authority in

[1] Chapter XXXI, para 11.

charge of this duty must "command the confidence of the different sections of the community whose co-operation is indispensable to the success of any adequate plan of educational reform." We do not share the expectation that the proposed Board will secure the confidence of the Musalmans of Bengal since the Muslim representation will be only from $\frac{1}{5}$ to $\frac{1}{6}$ of the Board, and since the opposition of the Musalmans in 1917 led to the rejection of the scheme for a Board of Education although its functions were to be only advisory. In reference to the attitude of the Musalmans the following note[1] which the Commission has received from Nawab Syed Nawabaly Chaudhury should be considered :—

"The appointment of a board for secondary education in order to advise Government about the distribution of grants and other matters of policy was first proposed in 1914 during the lifetime of the late Nawab of Dacca. He considered the scheme detrimental to the interests of Muhammadans and, on account of his opposition, the proposal was dropped. Last year again a resolution for creating an advisory board for secondary education was moved in the Bengal Legislative Council and all Muhammadan members and the member in charge of the Education portfolio opposed it and, consequently, the resolution fell through. The Muhammadans of Bengal consider it a question of vital importance in their own interest that the distribution of grants and the control of educational policy should rest with Government. The creation of a large secondary education board, with powers to distribute grants and to advise Government on questions of policy, will be detrimental to the interests of Muhammadans. Muhammadans will never be able to derive their full share from the institutions maintained or started by public funds until a special treatment, similar to that accorded by Lord Hardinge and Lord Carmichael, be reserved to them. Muhammadans are afraid that the special facilities which now exist in secondary education will no longer exist if secondary education be entrusted to a board .....From the experience of the University of Calcutta Muhammadans will be afraid that the advantages and special facilities which they now enjoy, and which they expect to get in future, will all be set aside by the Board should it unfortunately be created."

In view of this emphatic warning and evidence that many of the Musalmans of Bengal share these apprehensions as to the future of Muslim education if it be placed under an education board, we do not anticipate that the Board, if given the full administrative powers proposed for it in the report, would command the confidence of both the chief communities in Bengal.

17. *The constitution of the Board.*—It is proposed in the report that the Board should consist of from fifteen to eighteen members including a paid president, the Director of Public Instruction, a

[1] Question 4; see also Chapter VI, para. 17.

member of the Legislative Council, seven university representatives, and from five to eight members appointed by the Government of Bengal to secure the representation of medicine, agriculture, commerce and industry, upper secondary teaching, and the educational interests of girls and of the domiciled community. The Board is to include at least three Hindus and three Musalmans. The majority of the Board is to be non-official.

The universities representation, though nominally seven, would be actually larger, since doubtless some of the other members would be university men. The influence of the representatives of Calcutta University would probably be further increased as they could be more regular in attendance at the Board and on committees than might be possible for some of the most suitable representatives of agriculture, commerce, and industry. The power of the university representation would no doubt be greater than its proportional share since it would probably be a compact group of educational experts; and their opinions would carry more weight on general educational matters than those of the single representatives of various interests which have less educationally in common.

These interests should be represented on the Board; but if they are all to be included among the five to eight nominees of Government, its representation would be heterogeneous and might not secure for the non-university interests adequate influence on the general educational policy of the Board. We therefore suggest that two of the representatives of special interests should be included among the university members (one of the two might appropriately be a member of the Faculty of Medicine). As the election would require some adjustment to secure the prescribed categories of experience, the university representatives should, we think, be selected by the Executive Councils of the two Universities and not by the Courts.

18. We suggest the following constitution for the Board:—

1. Director of Public Instruction, Chairman.
2. Vice-Chairman, a member of the staff of the Department of Public Instruction especially concerned with secondary education. (He might be Assistant Director for Secondary Education.)
3. A member of the Bengal Legislative Council, elected by its unofficial members.

4-7. Four members appointed by the Executive Council of Calcutta University.[1]

8-9. Two members appointed by the Executive Council of Dacca University.[2]

10-13. Four members appointed by the Government of Bengal.[3]

14. A head master of an intermediate college appointed by the Government of Bengal.

15. A head master of a high school appointed by the Government of Bengal.

The Board should have a whole-time paid secretary, who should also act as registrar of the high school and intermediate college examinations.

As it is desirable that the Board should include representatives of both Muslim and Hindu opinion, at least one representative of Calcutta University, one representative of Dacca University, and at least one of the members appointed by Government should be a Musalman; and unless three Hindus are otherwise nominated, one representative of Calcutta University and two of those appointed by Government should be Hindus. In the appointment of the Board it would be necessary that the Government and the universities should submit a provisional list of nominations for adjustment so as to secure representatives of the different communities and requisite categories of experience.

19. *Summary of conclusions.*—As the supervision of secondary education is one of the primary duties of the State we do not consider that its financial and general administration should be delegated to a board of the type proposed. The Board could give most valuable assistance to the Department of Public Instruction in an advisory capacity; and if the Board be given executive powers in regard to curricula, examinations and recognition, it would have very extensive and important responsibilities. There

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[1] The six university members to include two representatives from among the following categories of experience: medicine including public health, commerce and industry, agriculture, and the educational interests of the domiciled community.

[2] These members to include two representatives from among the above four categories.

[3] If it be decided that the Board should be an administrative organisation for secondary, higher secondary and part of primary education and its duties be not confined to academic affairs, the proportion of the Musalmans should not be less than the proportion proposed for the re-constituted Legislative Council of Bengal.—Dia-ud-Din Ahmad.

seems no precedent for the administrative adventure of delegating the conduct of secondary education in a great country to a small board of the kind proposed; and the conditions in Bengal appear particularly ill-suited for such a method of educational administration.

III.—The proposed transfer of the Government colleges.

20. In the previous section we have considered a proposal which would remove from the Department of Public Instruction such financial control and share in the administration of the high schools as it has hitherto exercised. The powers of the department would be further reduced by the proposal in the report that the control of the Government colleges should be transferred from that department to non-official governing bodies—a proposal which we regard as undesirable. Under the new constitution proposed the Government would no longer appoint 80 *per cent.* of the Senate; and in view of this reduction in its powers of control over the University, we consider it the more important that the Government should retain its direct supervision of the Government colleges, at least until the question can be considered after 'some years' experience with the reconstituted university.

21. The advantages claimed for the establishment of Presidency College as a 'distinct corporation' and the changes suggested in its management are stated in Chapter XXXIV, paragraphs 158-159. It is proposed that:—

(*i*) Government should cease to exercise its special and detailed control.

(*ii*) The property should be vested in trustees.

(*iii*) The college should be allotted a stated annual block grant.

(*iv*) The governing body should be appointed mainly by Government, should include one or more university representatives, and at least two elected teachers, and this body should have power to administer the revenue and receive gifts and direct the general policy of the college.

22. These changes are not in themselves very substantial. The existing governing body, though appointed by Government, includes members, *e.g.*, Sir Asutosh Mookerjee, who may be regarded as representing the University, and more than half (5 out of 9 in 1918-19) are members of the teaching staff. This body has considerable latitude in expending such part of the annual grant allotted to the

college, as is not required for salaries and fixed charges. The governing body is still to be mainly appointed by Government, which could therefore continue to exercise special control. The two new items in the proposals are that the property should be vested in the trustees—the advantages of which are not obvious—and that the annual grant should be stated. The stated grant is prescribed for the sake of the first of the two advantages which the new arrangements is expected to secure: (*a*) that the Government would know its precise liabilities, and (*b*) that the available revenues could be freely used without the difficulties inherent in approved budgets. But if the grant is to be fixed, for a term of years, the necessary expansion of the college would be far more difficult; and the freedom to handle the revenues amounts to little, as the bulk of the expenditure is in fixed recurrent charges; salaries in 1915-16 amounted to 85 *per cent.*, scholarships to 10 *per cent.* and laboratory expenses to about 5 *per cent.*

23. The advantages to the college of the proposed new arrangement do not seem commensurate with the drawbacks and could be secured by some growth of the powers of the existing governing body, by allowing the college to carry forward balances so as to avoid the temptation to hasty expenditure towards the end of the financial year, and by encouragement of private endowments (which we understand there is no difficulty in the college accepting) by the Government undertaking not to reduce its grants to the college or to one of its departments in consequence of private benefactions.

24. We consider that the Government should maintain its direct responsibility for Presidency College and continue its administration by the Department of Public Instruction for the following reasons:—

(*i*) The proposed withdrawal of Government from much of its direct control over teaching universities in Bengal renders it the more necessary that Government should continue the direct administration of its colleges, so as to maintain them at a high level of efficiency. Presidency College would thus continue to raise the general standard among the other colleges, which it would help by providing well trained teachers for their staffs.

(*ii*) So long as Government provides the funds for Presidency College it is responsible for its efficiency, which it can maintain by the appointment of a due proportion of

British teachers on the staff, the limitation of the size of the classes, and the provision of funds for the necessary extension of the college work.

(*iii*) Presidency College requires expansion including the provision of a department of zoology, the enlargement of the departments of botany and chemistry, and the provision of more seminar rooms in arts. If the college receives a 'stated annual block grant'[1] from Government and is dependent for extra funds on public subscriptions, the expansion of the college would probably be retarded and might be completely blocked. The further grants necessary could probably be obtained more readily under the present system than if the college were transferred to a self-governing body.

(*iv*) General experience in Bengal does not encourage the expectation that the transfer of the college to a private governing body would secure it material financial aid from private donations. Such a body might meet the popular demand for increased admissions to the college by raising the size of the classes; it might also reduce salaries, and by both changes lower the standard of the college work.

(*v*) The maintenance of a due number of European teachers on the staff of the college is more likely to be secured if the college remains a Government institution. The colleges of Bengal, exclusive of the Government and mission colleges, have between them all only one European on their staffs.

(*vi*) To secure a satisfactory governing body might prove difficult in view of the variety of interests, communal and educational, which have to be considered; while the appointment of the teachers to it by election by the staff might introduce dissensions between the teachers of various grades and subjects. The junior teachers might decide the election if they have votes; and, if not, their exclusion would be a natural source of discontent.

[1] Chapter XXIV, para. 153.

(*vii*) The college might suffer under a non-official governing body which might be less united in policy than a body constituted as at present. If the Government representatives were in a small majority there would be a risk of a divergence of views which would lead to constant friction with the minority ; whereas if the Government representatives were in so large a majority as to virtually maintain Government control there would be no advantage in the new system. If the governors be appointed for a term of years, the busier members of the body might gradually lose interest and the management of the college might fall into the hands of the minority, and they could not be controlled without intervention by Government, which it might be reluctant to undertake.

(*viii*) The college enjoys to an unusual extent the trust of the Muslim community, which enjoys special privileges at the college, and that trust would not be as fully felt if the Government withdrew from its direct control.

(*ix*) The change would lessen the public prestige of the college which is a valuable educational asset. The college is the most important educational institution in Bengal and it is all important that its efficiency should not be jeopardised unless for changes which promise very substantial advantages.

25. Among the administrative difficulties in Bengal which render advisable the continuance for the present of the Government management of its colleges is the fewness of the men available for college governing bodies. It is not easy to secure much help from non-official Europeans as they are pre-occupied in their commercial and professional work, and when retirement gives them leisure they generally return to Europe.

26. For reasons similar to those above stated in reference to Presidency College we consider it desirable that the Government should continue the administration of the Government mufassal colleges.

IV.—The Government Educational Services.

27. Another safeguard for the educational efficiency of Bengal which we consider an essential accompaniment to the proposed

great extension of self-government in the Teaching University of Calcutta is the maintenance of the Government Educational Services. They seem to us advisable in the interests both of economy and efficiency, and would be indispensable if, as recommended in the preceding sections, the Government continues the administration of its colleges and high schools.

28. The staffing of the Government colleges and high schools by teachers in a Government educational service has many strong recommendations. Government service in India has such material advantages as security of tenure, higher salaries than are paid by other educational employers, safe pensions, chances of promotion to the highly paid appointments necessary in a large service, promotion to other Government services, long furlough, easy conditions of sick leave and medical attention, etc. The social prestige of Government service is especially high in India, and it helps to maintain an *esprit de corps* which eases discipline. Within reasonable limits freedom of opinion and speech are allowed in the Government educational services. Government service has also secured the appointment of British teachers[1] and owing to the chances of promotion to high appointments, enlists them on more economical terms than would be possible to a self-contained university or college.

29. Among the indirect advantages of the participation by Government in education through its own services are that its feeling of responsibility for education is strengthened, its acquaintance with educational work is more intimate, and its appreciation of the national importance of education is practically and publicly recognised. The need for a Government service is strengthened by the immaturity of service traditions among secondary and primary teachers. A strong educational profession has not yet developed and its growth would probably be encouraged by the maintenance of a nucleus of teachers in Government service.

30. The chief objections urged to the manning of colleges by a Government service seem to us to be that the official routine and mechanical rules of a large service are prejudicial to the originality and independence which are essential to the success of a university

[1] Excluding the mission colleges, there is only one British teacher, the principal of the new college at Rangpúr, in all the non-Government colleges of Bengal. Non-Indians are excluded by the terms of the endowments from the recently established Ghose and Palit professorships at the University.

teacher; and that a teacher who is a Government official cannot influence or inspire his students as effectively as he could in private service. The view sometimes expressed that teachers in a Government service are handicapped by their official status is however inconsistent with much local as well as non-Indian evidence. Nearly all the university professors of France and Germany are State servants, and they do not appear to be inferior in originality or influence to the staffs of autonomous universities. Government service was not fatal to the originality or influence of the professors of the Royal College of Science and Royal School of Mines in London, when its staff were Government servants and included Huxley, Judd, Tyndall, Lockyer, Rucker, Thorpe, Warrington Smyth, and Percy. In Bengal the professors of the Government colleges are not inferior in originality, intellectual independence and teaching power to the staffs of the private colleges. As far as we could judge from our inspection of the colleges the influence of the staffs in Government service are in no way inferior to those in the private colleges.

(*i*) The objection that teachers in Government service are not intellectually free appears to rest on slender foundations. The staffs of the Government colleges in India seem to enjoy no less intellectual freedom than those in private colleges, and have the advantage that difficulties which might lead to resignation or dismissal from a private college can be surmounted in Government service by transference.

(*ii*) It is urged that under Government service all appointments have to be made by the Secretary of State in London, and that better men could be obtained and more quickly if the University and colleges selected their own staffs. Comparisons are odious, but they need not be feared by those responsible for the Government educational appointments.

An appointment through the India Office may sometimes be necessarily slower, since a university can make tentative enquiries in anticipation of a vacancy more readily than could be expected of the Secretary of State. In most cases, however, an official appointments board with representatives in Delhi and London should have so much information as to the best fields of recruitment that it should be able to appoint from a

wider field and at least as expeditiously as the Executive Council of a university.

(*iii*) The complaint is made that slight modifications in the pay and tenure of appointments made by the Secretary of State require reference to London, and such appointments involve vexatious restrictions as to private work, and even as to extra educational work at the University. There appears, however, no practical difficulty in the Government of Bengal being given authority to deal with such matters; and part of the complaint is baseless. As the staffs of the Medical College and of the Civil Engineering College, Sibpur, are allowed private practice there is clearly no objection in principle or insuperable difficulty in arranging for professors in Government service to accept such extra work as they can undertake without interference with their official duties.

(*iv*) The efficiency of the Government educational service is said to be lowered by the transference of teachers from one post to another.[1] Transference has some important advantages; a mufassal college, *e.g.*, may secure better men than would be ready to accept service in it for life; and the long continued intellectual isolation of a single European in some mufassal locality would in most cases seriously impair his efficiency as a teacher. Transference is often beneficial and is necessary to fill vacancies caused by illness, furlough and special duties, and has been specially disturbing during the war. Transference should, however, be restricted within special branches of work and subjects. As recommended by the Public Services Commission[2] transference from the collegiate to the administrative and inspecting branches of the educational service should occur 'only in exceptional cases'; transference should be only between cognate subjects and with the full consent of the teacher concerned.

The objections to Government educational service seem to us vague and unsubstantial compared with its practical advantages,

[1] The mobility of the teachers in private colleges seems far greater.

[2] Royal Commission on Public Services in India, Report, Volume I, 1916, page 93.

to discard which would waste an important educational asset. The system, as hitherto worked, has however been attended by some defects which would seem remediable; the control from London appears to have been too detailed, and passage from the Provincial to the Indian Educational Service has been too infrequent. These defects could be removed if a certain proportion (say, 20 *per cent.*) of the appointments in the Indian Educational Service were made on the nominations of the Government of Bengal from the Provincial Educational Service or from other qualified residents in India.

31. The frequent interchange between the collegiate and administrative branches of the service has been inevitable in Bengal owing to the smallness of the staff. Not one head master of a Bengal high school is in the Indian Educational Service; if substantive members[1] of that service were engaged in the high schools and proposed intermediate colleges they would form a reserve of men suitable for transfer to the inspecting staff and the degree colleges need not be drawn on for this work. We consider therefore that the number of the Indian Educational Service in Bengal (or of the corresponding service that may be instituted to replace it) should be increased. This reform would be still more necessary, if (as is desirable in some cases and is quite compatible with Government service) some of the chairs in the Government colleges are filled by special appointments. Their occupants would not then be available as temporary principals or inspectors.

32. One drawback in special appointments to particular chairs is the lack of promotion. This disadvantage would be reduced by granting especially deserving men extra remuneration without leaving the scholastic service, or by special allowances to the heads of departments in the larger colleges, or by promotion of men of administrative capacity to the posts of principal or vice-chancellor.

33. The appointment of a body of Europeans and western trained teachers for the high schools and intermediate colleges appears very desirable; but the auxiliary corps proposed in Chapter XXXI, paragraphs 104-107, does not seem to us a suitable method of recruitment. In the engagement of teachers for these institu-

[1] The report (Chapter LI, para. 18) recommends from sixty to seventy teachers of this grade.

tions it seems to us essential that the salaries of European teachers enlisted in Europe should not be less than those that are now given to the Indian Educational Service, and that the conditions of appointment of Europeans should not risk lowering European educational prestige.

The position of a European employed in a subordinate[1] or supplementary position in a mufassal school or intermediate college would probably be difficult and uncomfortable, while the administration of a corps of teachers, if enlisted under many different conditions of pay, tenure and work, would present considerable difficulties. Nor will this corps remove the kind of distinction that now exists between the members of the Indian Educational Service and of the Provincial Educational Service. In any form of recruitment some distinction between the Indian and European trained teachers must persist, but the rigidity of the barrier and such grievances as may exist should be reduced as far as practicable. If more Europeans can be secured for higher secondary teaching in Bengal, the enlargement of the existing educational services would appear more convenient and useful than the establishment of a new kind of service.

34. *Summary of recommendations.*—In accordance with the foregoing considerations it seems desirable that the Government educational services be retained in Bengal for the staffs of all Government colleges, of Government intermediate colleges, and of Government high schools, and the inspectors and staff of the Department of Public Instruction.

Appointments to the chairs in the Government colleges which like the Presidency chairs have special relations to the University should be outside the cadre of the Indian Educational Service, but members of that service should be eligible for appointment to them.

Appointments to the Indian Educational Service and appointments to the chairs of the Government colleges should be made by the Secretary of State. Junior appointments at the colleges should be made, as at present, by the Government of Bengal. There should be a distinct branch of the service for the univer-

[1] It might be found desirable to engage Europeans resident in India for special subjects such as spoken European languages, and as they would know the local conditions and cost of living lower rates might fairly be offered them.

sity colleges, and a second for the intermediate colleges, high schools, and inspectorate and administrative staffs of the Department of Public Instruction. The majority of the appointments at the university colleges should be posts in definite subjects, and a teacher should not be transferred without his consent from one subject to another, or from the collegiate to the administrative branches. In order to reduce the rigidity of the barrier between the Indian Educational Service and the Provincial Educational Service (or the corresponding services that may be established) a certain proportion (say, 20 *per cent.*) of the posts in the Indian Educational Service should be filled by the local Government either by appointment of persons already in India or by promotion from the Provincial Educational Service.

In regard to Chapter LII, paragraphs 21-28, on "the comparative advantages of a Government service of teachers and of an organised teaching profession," dealing with some points raised in this section we remark that we fully recognise the many advantages of an educational professional service in countries with a well developed educational system and with a high average level of training and efficiency among its teachers. The natural development of enrolling all the school teachers in one service is a State educational service, as in Australia. As the Australian States regard it to be one of their primary duties to ensure that every child shall receive a sound education, they establish free schools[1] throughout the country even in sparsely peopled districts, and to secure the most efficient teachers available, engage them all in the civil service. Until the Government of Bengal is prepared to undertake similar liabilities for the management and provision of the schools it seems to us that the most practicable arrangement will be a Government service for the Government schools and other forms of service for the private schools.

V.—The Mufassal Board.

35. So long as it is necessary to maintain the colleges in the Bengal mufassal in affiliation with the University of Calcutta we agree with the report that these colleges should be administered by a special board, as to the constitution of which we are not in

[1] In some cases the State supplies free university education; and even free examination.

full agreement with our colleagues. Instead of the constitution proposed in Chapter XXXVII, paragraph 80, we suggest a smaller board with larger Government representation, constituted on the following lines:—

The Vice-Chancellor of the University of Calcutta.
The Vice-Chancellor of the University of Dacca.
The Director of Public Instruction or his representative.
The Chairman of the Examination Board.
Six members appointed by the Academic Council of Calcutta University of whom at least two should be Musalmans, and none of whom should be members of the staff of the governing body of any affiliated college.
Six members elected by the principals of the affiliated mufassal colleges each to serve for three years, two to retire annually.[1]
Fifteen members appointed by the Government of Bengal, of whom five at least should be Musalmans.

The Board should have an Executive Committee of ten members of which the Vice-Chancellor should be Chairman and the Director of Public Instruction or his representative and the Chairman of the Examination Board should both be members, and there should be on it not less than three Musalmans.

36. The main difference between this Board and that suggested in the report[2] is in the amount of Government representation, which on the mufassal board should, we consider, be not less than half the total. The Board as here proposed would be smaller and would not necessarily include representatives of all the mufassal colleges. This Board is to be an administrative organisation which would control colleges distributed throughout Bengal, and for the present also in the independent political provinces—Assam and Burma. The Board would deal with the distribution of higher education in Bengal, with the standards to be exacted from the varied provincial colleges, and with educational problems which cannot always be decided solely on academic grounds.

37. The amount of self-government appropriate to a university board with these national administrative functions is more restricted than that which can be entrusted to a teaching university

[1] The principals of 'university' colleges should be *ex-officio* members of the Board. —Zia-ud-din Ahmad.

[2] Chapter XXXVII, para. 80.

which is concerned with training students in a single city. The autonomy of a university which is a corporation of learning engaged in teaching and research in one locality may be much more extensive than that suitable to an administrative organisation with duties extending throughout a great province or state. We accordingly consider that the Government representation on the Mufassal Board should amount to at least 50 *per cent.* We concur with the suggested powers of the Board as defined in Chapter XXXVII, paragraph 81, sub-sections (i) to (v) and (vii) to (ix). The special panel proposed in sub-section (vi) seems to us premature. The main purpose of this panel, the encouragement[1] of special courses in the colleges, would we consider be adequately met by the provision in Chapter XXXVII, paragraph 81, sub-section (vi), whereby a college could submit to the Mufassal Board for approval by the Academic Council some variation from the normal curriculum; and if the proposal be accepted this college would be given a separate examination for that part of the course.

In addition to the powers enumerated in Chapter XXXVII, paragraph 81, we recommend that all questions relating to mufassal colleges and all applications to Government for grants for mufassal colleges should be referred for report to the Executive Committee of the Mufassal Board.

VI.—The distribution of teaching between the University and the colleges.

38. The Commission recommends that at Dacca the University should conduct the teaching, whereas in Calcutta the teaching should be conducted by various colleges and institutions, some of which will belong to the University (the incorporated colleges according to the nomenclature of the report), and other colleges will not.

39. The difficulties in the co-operation of colleges which are incorporated with those which are not incorporated are due to the former being the property of the University. Many answers to the Commission's questions deplore the rivalry between the University and the non-incorporated colleges. These difficulties might be avoided and provision made for subjects now neglected if the University and the independent colleges agreed to undertake

[1] I consider the proposal undesirable unless the number of mufassal degree colleges be at least a dozen.—J. W. Gregory.

separate branches of teaching. This policy is foreshadowed in the proposal by the Indian Universities Commission of 1902[1] that the University should provide law teaching in a central law college, while medical education for degrees and engineering should be left to the colleges.

40. The University has shown by its recent proposals to establish faculties of technology, commerce and agriculture that it is anxious to provide teaching in those subjects, which it could do without rivalry with the colleges. The inter-collegiate sub-division of work has been successfully adopted by Durham University. Of its four Faculties, medicine is confined to Newcastle, science and commerce to the Armstrong College, Newcastle; theology to Durham; and it is only in arts that courses are undertaken in both cities. Owing to this division of work the colleges work harmoniously and can be entrusted with great freedom. The recent Royal Commission on University Education in Wales[2] remark in reference to Durham University and its concentration of the work of different faculties at separate institutions that "this fact, and the large degree of freedom allowed in practice to each college to manage its own affairs, seem to have eased the working of a complicated system of Government."

The sub-division of work that would appear most practicable in Calcutta, as it would make the least change in the existing distribution of work and would encourage the provision of teaching in departments now most neglected, would be as follows:—

(*i*) The University to maintain its law colleges, and, except for the Ripon Law College, which should be allowed to continue so long as it maintains an adequate standard, no law teaching for degrees to be undertaken by the colleges.

(*ii*) The University to develope its College of Science as a 'College of Applied Science', teaching technology (except engineering) and applied science.

(*iii*) The University to provide institutions or colleges, if required, in agriculture and commerce.

(*iv*) The non-incorporated colleges to teach pure science, medicine and engineering.

[1] Report, page 35.

[2] Report, page 58.

(*v*) The non-incorporated colleges to provide teaching in arts, such arts classes as the existing colleges cannot supply to be provided in a new constituent college to be founded by Government to be described later.[1]

(*vi*) Special Islamic and Sanskritic studies to be undertaken respectively at the Islamia and Sanskrit Colleges which should be non-incorporated colleges.

41. In the above suggestions it will be convenient firstly to consider a practicable division between pure and applied science[2] which is of course not absolute, for the teaching of applied science must accompany the principles which govern the processes and the teaching of pure science must be illustrated by reference to its applications. If the teaching be distributed between the incorporated colleges and those which are not incorporated on the principles above suggested the University would require from two to four incorporated colleges which might be provided as follows.

42. *University Law College.*—This college is already in existence. Its history is summarised in a minute by Sir Asutosh Mookerjee, in the University Calendar for 1916, Part I, pages 115-120. Its organisation and work are described in Chapter XXII, paragraphs 12-17 of the report. Its teaching is post-graduate for the degree of B.L.

43. *University College of Applied Science.*—The recently founded 'University College of Science' might be appropriately developed as a college of applied science since the two munificent endowments which led to its establishment were both intended especially to promote work in applied science.

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[1] Para. 59 and 60 below.

[2] The term 'applied science' is variously used; according to one widely adopted use it is restricted to the study of various sciences in reference to their industries and applications. This connotation of the term can be explained by a few illustrations. Physiology, for example, might be called an applied science as the application of physics and chemistry to the phenomena of life, but it is conveniently regarded as a pure science since its methods are predominantly academic. Similarly, as meteorology applies the laws of various sciences to the study of climate it may be considered an applied science, but as the teaching of meteorology on a university standard consists mainly of its theoretical aspects it is most conveniently ranked educationally as a pure science, but if training has to be given to observers in the telegraphic and other processes used in daily weather reporting it should be given in a technical institute rather than in a college. So also with astronomy, when taught from its theoretical aspects it should count as a pure science, but a class

Thus the Palit Trust Deed describes its object as "the promotion and diffusion of scientific and technical education and the cultivation and advancement of science, pure and applied."[1] Sir Rash Behary Ghose in the letter offering his great gift to the University stated that he intended it for the "promotion of scientific and technical education and for the cultivation and advancement of science, pure and applied." The same letter prescribes as the first duty of each of the professors "(*a*) to carry on original research in his special subject with a view to extend the bounds of knowledge, and to improve, by the application of his researches the arts, industries, manufactures and agriculture of this country."[2] The chair of botany under this trust is entitled "botany, with special reference to agriculture."

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in nautical astronomy would be more appropriate in a technical institute than in a university college. A department of applied chemistry should deal with the chemical products used in the arts, the investigation and improvement of the processes of manufacture, and the most economical employment of such products, whereas a department of pure chemistry should teach the facts and principles in their purely scientific aspects without special reference to their practical utility.

A university course in pure geology should discuss some of the results gained by mining geology, and include general descriptions of some mining fields, and some account of the problems of building stones, soils and water supply, so far as these questions can be studied by ordinary laboratory methods and appliances, but the detailed description of mining fields, and of such methods of prospecting as boring, should be left to technical institutions, and mining departments.

The advantage of the separation of pure and applied science teaching is that the teacher of the latter deals with the industrial applications of his subject and requires apparatus of a larger scale than would be appropriate in a laboratory of pure science. On the lines suggested in the previous paragraph no insurmountable difficulty need occur in the delimitation of work between pure and applied science. The instruction of teachers in the methods of teaching science would be left to the colleges dealing with pure science.

Colleges of applied science in India would find most promising and profitable fields of work. The Indian Institute of Science at Bangalore illustrates their value in applied physics and chemistry. The agricultural work at Pusa could be most usefully supplemented and extended by provincial colleges of applied biology which would promulgate the Pusa results and determine their local applications. Such colleges would find problems not only of incalculable economic value to the nation but of the highest academic interest for many important problems in pure science will be solved by the data of applied science. The new Palit House Laboratories have an opportunity of undertaking in India work on the lines of the Biological Institute under Dr. Wm. Patterson. They have a unique opportunity, which would be lost if they work on lines for which the Sibpur Botanical Gardens and Herbarium have immeasurably better opportunities, and if they devote the resources available for zoology to teaching suitable to the colleges near College Square:—J. W. Gregory.

[1] Calcutta University Calendar for 1916, Part I, page 69.

[2] *Ibid.*, page 103.

44. The University would therefore be justified in devoting these endowments and the new college to applied science. The trusts no doubt refer to pure science as well; but the teaching of applied science necessarily includes some pure science. The investigation of any new economic problem which is suitable for investigation in a university laboratory must begin with the study of the theoretical possibilities; and the amount of pure science which is necessarily included in a university study of applied science would be adequate to satisfy this requirement of the trust deeds. At present the college seems to be engaged in pure science to the complete neglect of the prescribed work on the industrial applications of science on which the founders of the trusts laid such emphasis.

45. The developement of the College of Science as a college of applied science would have several important advantages. It would enable the University to begin at once on a considerable scale that higher technical training which is now recognised as one of the most urgent educational needs of Bengal. The College of Science could easily be devoted to this purpose without serious waste as, owing to the war, progress with the equipment of the college has been greatly retarded. The funds which the University is able to devote to the college would enable great progress to be made. Thus in the university budget for 1917-18 Rs. 98,400 were allotted for salaries, Rs. 1,68,000 for equipment, including grants of Rs. 40,000 each to the departments of physics, chemistry and botany and of Rs. 15,000 to zoology. Such grants would soon enable the departments to get useful technical equipment.

46. The building is complete and there is room for expansion. The first classes were held in it in July 1915 and it is now used for post-graduate classes in chemistry, physics, applied mathematics and experimental psychology. The department of experimental psychology should be transferred to the training college or an arts college, as the subject is more useful in connexion with education and philosophy than with physical science. The three other departments could be developed with special reference to applied science. The department of chemistry, whose distinguished head is especially competent in questions of industrial and applied chemistry, should provide advanced training and research in industrial chemistry, including, for example, colour chemistry and the preparation of dyes, drugs, and photographic

chemicals; gas analysis, oils and distillation; and perhaps also tanning and fermentation; it should include also agricultural chemistry in connexion with the university agricultural course and farm. The equipment of the present chemistry department could be utilised for the analytical and small scale work.

47. The department of physics could be developed with special reference to electro-technology, applied thermo-dynamics, applied optics, and the standardisation of instruments. It should[1] be so organised as to supplement and co-operate with the electrical department at Sibpur where the accommodation would probably not suffice for many students in excess of those taking the full engineering and mining courses. The university college course would be available for students who were not proposing to become regular electrical engineers, but who needed a course in electro-technology in connexion with various industries. The department of mechanics and applied mathematics should be as adapted to the requirements of students training for various industrial occupations.

48. The site of the college seems very suitable for a college of applied sciences since it is in the north-east quarter of Calcutta which is becoming one of the chief industrial quarters of Calcutta. This district would be appropriate for the proposed Technological Institute, which is suggested in Chapter XLVIII. This institute would probably not be affiliated to the University, but it should co-operate with the University College of Science and should provide workshops and practical training in regard to leather, dyeing and textiles; electrical, mechanical and sanitary engineering; building construction, wood-working and furniture; and the preparation of foods and foodstuffs, etc. The work of this institute would be of a less theoretical character than that undertaken at the University and would be presumably under the Department of Industries. Its workshops should be open to

[1] The report recommends (Chapter XLVIII, paras. 6 and 14) the teaching of these branches of applied chemistry and physics by the University and that the University College of Science should be the chief centre of applied chemistry and applied physics; but it proposes that these technical subjects shall be taught there in addition to those for M.Sc., in pure science. We fear that the provision at the one institution of both technical and pure science courses would result in the standard of both being unsatisfactory. Unless the University College of Science is prepared to devote itself to applied science it would be safer for that college to confine itself to pure science and trust to provision being made for applied science elsewhere.

university students who would gain in them experience with plant of a larger scale than that necessary at the University College of Applied Science, which could therefore manage with less extensive workshops and could devote its resources to well equipped laboratories in applied physics, chemistry and experimental mathematics.

49. *The Palit College or Department of Applied Biology.*—Sir Taraknath Palit bequeathed to the University his residence, 35, Ballygunj Circular Road, and its grounds of an area of 24 *bighas*. It passed into the possession of the University in 1917. The mansion is being used for laboratories in botany and zoology under the Sir Rash Behary Ghose Professor of "Botany with special reference to agriculture," a new chair of botany now held by Dr. Brühl, and a university professor of zoology whose chair is endowed by the Government of India. The chief drawback is that the house is four miles distant by road from the University. It is near Ballygunj railway station but the train service is inconvenient. The Trust Deed gives the University power to sell the property[1] so that it might be disposed of and new laboratories built near the University Science College with the proceeds; but as the property is situated on the outer suburbs of Calcutta it is doubtful whether the sale would realise sufficient to buy an adequate site near the Science College; and the land around the laboratories would be most useful to a research institute in applied biology.

50. Sir Rash Behary Ghose's Chair of Botany is directed by the terms of the endowment towards agricultural work and it could be most usefully developed as a chair of applied botany, as in fact it is being developed. The University is at liberty to direct the zoological chair as it considers desirable; but as the Zoological Survey of India at the Indian Museum is the most suitable institution for research in academic zoology, it would be suitable that the school of zoology at Palit House should, like the Botany School, be directed mainly to applied zoology. As the University has appointed an entomologist, Mr. S. Mallik, the first holder of this chair, he could develope it from the first as a school of economic zoology with special reference to agriculture and the investigation of Indian insect pests. A bacteriological laboratory and a chemical laboratory for soil analysis and other work in agricultural

[1] Calcutta University Calendar for 1916, Part I, page 84.

botany have already been established at Palit House and both should be maintained. The work at Palit House would not, on these lines, compete with the intermediate colleges teaching zoology for the preliminary scientific examination in medicine, nor with the courses in general zoology which should be provided in one or more of the Calcutta colleges as an optional subject for B.Sc. and M.Sc.

51. The Palit Laboratories might be administered as a department of the University College of Applied Science; but as that college will be mainly connected with the physical sciences it would probably be most convenient, at least ultimately, to institute Palit House as a separate college under a governing board on which representatives of the natural sciences would be predominant.

The courses at the college should be open to post-graduate students of biology, and to other students who are following special lines of biological study or research.

52. If this policy be adopted the increased accommodation for teaching in chemistry would probably be required at Presidency and other colleges. The removal of the intermediate classes might provide adequate space at Presidency College for the present, especially as many of the post-graduate students would probably enter for the applied science courses.

53. *University colleges or institutes in agriculture and commerce.*—If in the future colleges in agriculture and commerce[1] are established in connexion with the University there would be decided advantages in their establishment as incorporated colleges. The Commission do not propose the immediate establishment of an agricultural college, but would welcome a university farm on the outskirts of the suburbs on which there should be class-rooms and laboratories supplementary to those in Calcutta. This farm might in time grow into an incorporated college.

54. The advantages that may be expected from the suggested sub-division of teaching between the incorporated and non-incorporated colleges may be as follows:—

(*i*) It would remove competition and thus tend to greater harmony within the University.

[1] The Indian Industrial Commission (Report, page 117) regards favourably the institution of such colleges by the Indian universities.

(*ii*) It would encourage specialisation among the colleges and consequently increase the range of their teaching.

(*iii*) It would be more economical and could be begun with such additions to the existing staffs and expenditure as may be early available, and expanded as the revenues and resources increase.

(*iv*) It would enable the University at once to begin advanced courses in applied science.

(*v*) It could be worked under the constitution proposed in the report, the statutes assigning to some of the colleges special branches of teaching.

(*vi*) It could be adopted, as far as it concerns science, commerce and agriculture, without new legislation. If the Government decided that its grants-in-aid of science teaching at the incorporated colleges should be devoted to applied science, and its grants-in-aid of science to the non-incorporated colleges (apart from grants to Sibpur for engineering or to the medical colleges for medicine) should be devoted to pure science, and that its grants to the University in aid of commercial and agricultural education should be given to incorporated colleges or institutes, the policy would be put into operation.

VII.—The post-graduate system.

55. The existing post-graduate system which was introduced in 1917 has three excellent features; it secured a great extension of post-graduate teaching, it arranged for the direct representation of the teachers on the Post-Graduate Boards of Studies and Councils, and it promised the full co-operation with the colleges to the extent of their desires and resources.

56. The system has however several serious defects:—

(*i*) It has established within the University an organisation with its own councils and boards of studies distinct from those supervising the undergraduate work, and it does not secure adequate co-ordination of the undergraduate and post-graduate classes and courses of study.

(*ii*) This organisation has set up within the University a body which is unduly powerful (the great majority of the University teaching appointments are made by it)

and independent. "It undoubtedly," says Mr. Sharp,[1] "creates an *imperium in imperio*."

(*iii*) By restricting the whole of the post-graduate teaching to the university organisation it is regarded by some of the college authorities as bound to lessen the efficiency of the higher teaching in the colleges.

(*iv*) The teaching in the separate subjects is organised by seventeen Boards of Higher Studies, of fifteen of which the President of the two Post-Graduate Councils is the Chairman. We consider that the Chairman of a University Board of Higher Studies should be an expert in that subject and usually one of the senior teachers in it.

(*v*) The superintendence of the post-graduate teaching is inadequate to secure the full discharge of the work allotted to all the teachers.

(*vi*) The teaching is given in numerous short courses[2] which are in some subjects inadequately correlated, so that the students may fail to secure a clear view of their subject as a whole.

(*vii*) The difficulty in the co-ordination of the classes is increased by the employment of staffs which are very numerous in proportion to the numbers of students; thus in 1917-18 there were 22 post-graduate teachers in Sanskrit for 39 students; in Pali 11 teachers for 6 students; in experimental psychology 8 teachers for 11 students; in chemistry 11 teachers for 33 students.

(*viii*) The use of the degree examination in the co-ordination of the teaching is lessened by the inexperience of some of the examiners. A student who has passed the master's degree examination in one year has been examiner therein a year later. The influence of the 'external examiners' is reduced by the fact that some of them are university officials or teachers in the University

[1] Question 3; see also Ramananda Chatterjee, Modern Review, July 1918, pages 15-16.

[2] For example, the programme for the courses in physics in 1918-19 comprises for the fifth year class, 14 lecture courses, including 240 lectures, given by 10 lecturers; and for the sixth year class, 8 general courses amounting to 72 lectures by 8 lecturers, and 16 special courses, of 24 lectures in each, given by 13 lecturers. The number of students is 26 for each of the two years.

in other subjects. The conduct of the master's examination is rendered especially costly and complicated by the large numbers of examiners; in 1918 there were 304 examiners for 904 candidates.

57. The post-graduate system suffers from the praiseworthy faults of being organised on over ambitious and extravagant lines, and from the evidence given us in some subjects the teaching as a whole is less satisfactory than previously. "The present arrangement," reports one of the post-graduate teachers, "from the student's point of view, too, is far from satisfactory."

58. The synthesis proposed in Chapter XXXIV is expected to remedy all the defects of the post-graduate system. As the synthesis comes into operation the post-graduate students will gradually become members of constituent colleges, and the post-graduate teachers will be assigned to the staffs of the constituent colleges with the exception of relatively few teachers of highly specialised subjects for which no constituent colleges may be willing to arrange. This process should be begun at once, if the passing of the new Act is to be delayed. Some of the teachers on the university post-graduate staff should be assigned to the colleges and take part in their undergraduate teaching as well as in the inter-collegiate post-graduate teaching. The assigned teacher would be subject to the same college regulations as the other members of its teaching staff and the university contribution to his salary should be paid to the college, but definitely assigned for his payment. This process would appropriately begin with the assignment of post-graduate teachers to colleges in a subject in which they are specially successful with their honours work, and would only be made if the colleges were willing to accept the lecturers and provide accommodation for the inter-collegiate lectures.

59. At the present time the process could only be partial, for there is no accommodation in the Calcutta arts colleges for another 1,500 students. It is an essential part of the Commission's scheme that new colleges be established in Calcutta; and for the accommodation and adequate organisation of this large body of post-graduate arts students one of the new colleges should be planned with special consideration for their needs. This new arts college should not be for post-graduate students alone, though it should be especially adapted for honours and post-graduate classes in arts. It should also provide pass classes in special subjects taken by only a few students.

The college should have accommodation for 1,000 students; and it might thus provide for the post-graduate arts students for whom places could not be found in other colleges.

60. We consider that the new arts college should be founded as a Government constituent college. It should, like Presidency College, be a great support to the Teaching University, while it would not interfere with the development of the other colleges as there would be left for them ample scope for post-graduate and honours work. We are also led to this conclusion by the consideration that the supervision of the conditions of residence and general work of this large number of students is a serious responsibility. The direct management of these post-graduate classes, comprising more than 1,500 students, would throw too much work on the academic and executive councils proposed in the new constitution.

61. At present about half the M.A. students study for that degree concurrently with that for the post-graduate degree in law. The inherent difficulties in the maintenance of a high degree standard must be seriously increased if half the post-graduate students are working at the same time for post-graduate degrees in different faculties. The absolute prohibition of this practice would be undesirable, since students who intend to specialise in some branch of law, may suitably undertake courses in arts, science or medicine concurrently with those for the B.L. degree. Such students would, however, probably be above the average in ability, and a few exceptions would not tend to lower the standard. The continuation of taking double post-graduate degrees to the present extent must be prejudicial to the attainment of satisfactory standards. We therefore recommend that post-graduate degrees in different Faculties should only be taken by special permission of the Deans of the Faculties concerned and such permission should be exceptional.

VIII.—Inter-collegiate lectures.

62. We recognise the many great advantages—as pointed out in the report—of inter-collegiate lectures, especially in post-graduate work and in honours for the bachelor's degrees; but we consider that owing to various difficulties it may not be possible to use them to the extent contemplated in the report, and that the bulk of the classes for the pass degree should be collegiate.

63. The limited employment of inter-collegiate lecturing in Calcutta in the past has been doubtless largely due to the difficulties. It is restricted by the distance between the colleges. St. Xavier's College, for example, is two miles by road from the University and more than three miles from the Scottish Churches College. Allowing a margin of time at the beginning and a few minutes at the end to answer enquiries, one hour's lecture at the University by a member of the St. Xavier's staff would occupy more than two hours. A college so situated might agree to its professors giving occasional short inter-collegiate courses; but it could hardly spare its principal or one of its leading teachers for a daily lecture at the University.

64. Some of the other colleges are nearer the University; but even those that are a mile away would find inter-collegiate lecturing impracticable for the main pass subjects; with which even neighbouring colleges might find difficulties with time-tables; for the college day is short, being usually between 10-30 and 4-30.

65. The climate presents obstacles. The rains in Calcutta last from the later part of May to September and the two wettest months, July and August, are both in the university session. The mean monthly rainfall and the number of days per month on which rain falls, according to figures supplied by the Government Meteorologist, Mr. D. B. Meek, are as follows:—

Month.	Normal total rainfall of Calcutta.	Normal number of rainy days for Calcutta.
May	5·74"	7·2
June	11·43"	12·8
July	12·89"	18·6
August	12·16"	18·3
September	10·35"	13·2

The rain falls in drenching storms, and if the students had frequently to go from one college to another they would probably often have to sit through their classes in wet clothes. This factor may be only of secondary importance, but some witnesses have referred to it as a difficulty. Thus Mr. T. T. Williams, in an interview with the Commission at Dacca on 10th December 1917, recommended that the

college buildings there should be within at most five minutes walk of each other, as during the rainy season students could not reasonably be expected to go further between lectures. The Rev. A. B. Johnston, Principal of St. Paul's College, remarks[1] that "during the hot weather and rains climatic conditions would make inter-collegiate lectures difficult."

66. The most serious difficulty with inter-collegiate classes is that the students are too numerous in Calcutta for combined classes in the main subjects. The City College in 1917 had 278 students in the third year B.A. class, and 401 in the fourth year B.A.; the classes had therefore to be sub-divided into two and three sections respectively. When classes have to be sub-divided no economy in staff is gained by admission of students from other colleges; for larger numbers would only necessitate further sub-division. Classes in subjects which are taken by a comparatively small number of students may be combined, as has been done in botany; but owing to the large numbers of pass students and the desirability of restricting the size of the classes, provision should be made for the pass teaching of the main subjects in each of the constituent colleges.

IX.—The course for M.Sc.

67. The maintenance of a high standard for the higher degrees seems to us so important that we regret a recommendation[2] which involves the risk of lowering the standard of the M.Sc. The sequence of degrees, bachelor, master and doctor, should, we consider, represent three markedly different stages of attainment. The degree of B.Sc. should certify a general knowledge of the principles and methods of one science or of two or three cognate sciences; the M.Sc. that the candidate has a sufficient command of the methods of research in one science to have conducted in it a useful piece of research; the D.Sc. should be awarded only for research of marked originality and value. The proposals that the M.Sc. may be awarded to a student a year after he has taken the B.Sc. with honours on presentation of a piece of independent work, without necessary attendance at lectures or written examination, seems to us undesirable. We fear that very

[1] Question 5.

[2] Chapter XXXIV, paras. 32-34.

few of even the honours B.Sc. students would have reached a stage from which they could within a year carry through a piece of research adequate for M.Sc.; and this regulation would probably encourage some of those who had taken a poor place in honours to secure their M.Sc. by some hasty effort in research. An M.Sc. awarded on one year's independent work would be too near in standard to the B.Sc. and would ultimately involve an easy doctorate. Two years' work at this stage would not waste the time of a specially brilliant and original student as he could put it to good use in research in preparation for his doctor's thesis; and the risk of lowering the degree, by the expectation that the honours B.Sc. students would gain their M.Sc. after a year's work, should not be lightly incurred.

X.—Medical college at Dacca and the preliminary science examinations.

68. The universities of India have failed to supply medical graduates adequate in number to the needs of India. Medical degrees in Bengal are at present confined to students of the Calcutta Medical College, to which last year only one applicant out of every six was admitted. According to Col. Calvert the admissions are 150 a year, of which 18 are reserved for Beharis and Oriyas and 6 for Assamese. Some of the students come from Burma, Ceylon, and other places outside Bengal. Hence even if all the students admitted to the Calcutta Medical College graduated, and all settled in Bengal, Bihar and Orissa, and Assam, the output from the college would provide these provinces with only one medical graduate a year for every 600,000 of the population. Entrance to the Law Faculty is under no such narrow restrictions. The University Law College has far more students than the Medical College; and no candidate for admission is rejected. Yet Bengal appears to need more doctors than further lawyers.

69. The figures in the table at the end of Chapter XLIV show several significant facts:—

(*i*) The total number of medical practitioners (including those with British qualifications, Indian graduates, assistant surgeons, and sub-assistant surgeons) in Bengal, Bihar and Orissa is 1 to 29,000 of the population. Many more medical men are therefore needed.

(*ii*) The assertions that Calcutta is overcrowded with medical graduates and that graduates will not settle in the mufassal are not supported by this table, for more than half of them are in Calcutta. Taking the population of Calcutta (including Howrah and the suburbs) as 1,250,000, the number of practitioners qualified as assistant surgeons is 1 to 3,128 persons, which, in view of the concentration of hospitals, of the higher medical services, and of the wealthier classes in Calcutta, does not appear excessive.

(*iii*) The proportion of medical men with the higher qualifications in Calcutta is no doubt excessive in regard to that in the mufassal.

But capital cities naturally attract more than their numerical proportion of doctors; and the disproportion in Calcutta is increased by the relative poverty and backwardness of the mufassal population. In Britain the excess of medical men per 1,000 of the population in London over that outside London is less extreme than in Bengal, since in Britain there are so many provincial medical centres. The disproportion between the medical graduates in Calcutta and in the mufassal would be reduced if there were centres of medical education in the mufassal. A mufassal student who has spent eight years in Calcutta training for his medical degree is likely to have lost touch with his home and to settle in Calcutta. The only possible mufassal medical college in Bengal at present is at Dacca, and its establishment would help the local students to settle there and in other towns of Eastern Bengal. A medical college at Dacca would, amongst other advantages, widen the distribution of practitioners of the assistant surgeon grade in the Bengal mufassal.

70. "The Government," says the report,[1] "intend the University of Dacca to rank among the more influential of modern universities;" but it can hardly expect to attain that rank unless it be entrusted with a Medical Faculty and college. In view of the need for more medical men in India we recommend that as early as possible the Medical School at Dacca should become a medical college. As more sub-assistant surgeons are also needed, the Dacca Medical School should be replaced by a new school in some other town in Eastern Bengal.

[1] Chapter XXXIII, para. 171.

71. Restriction to the higher grade of medical practice is also restricted in Bengal by the length of the training; it takes eight years after matriculation, at which the average age is $18\frac{1}{2}$; hence even if a candidate passes his post-matriculation course in the minimum time, if he begins at the average age, he is $26\frac{1}{2}$ before being qualified and that is late for a man in a comparatively poor country to begin the practice of his profession. The period could be reduced by a year, as suggested in the following paragraphs, if as the report suggests, the I.Sc. examination includes practical examinations in the science subjects.

72. *The intermediate colleges and the preliminary medical science examination for M.B.*—The first of the two main purposes of the intermediate colleges, according to Chapter XXXII, paragraph 12, is to provide training which would qualify their students for admissions to the universities in all its Faculties or into other institutions for higher and technological training. According to this statement we feel that those intermediate colleges which are selected to supply training in the four sciences required for the medical preliminary science examination will have failed in their purpose if they do not qualify their students either to enter directly for the preliminary science examination or to maintain in the four sciences included in that examination a standard at the intermediate examination which the Medical Faculty will accept as equivalent to that of the preliminary science examination.

73. That the subjects in the intermediate examination and preliminary science examination were intended to be equivalent is clear from the regulation[1] that a candidat who has passed in any of them in the intermediate "shall be excused attendance at the lectures and the practical work, and also the theoretical portion of the examination in the corresponding subject. No such candidates shall, however, be excused the oral and practical portion of the examination in any subject." The recognition cannot extend to the practical examination as there is none at the intermediate examination. That the courses for the intermediate and preliminary examinations are very similar both in scope and standard, is shown by the regulations.[2] The range is somewhat wider in chemistry for the preliminary science and in physics for

[1] Calcutta University Regulations, page 271.

[2] *Ibid*, pages 205-211, 261-264 and 271.

the intermediate. The medical botany syllabus is the more detailed, but the intermediate course might cover more as its systematic work is not limited to only eight orders. In zoology the practical examination for preliminary science includes the dissection of three more invertebrates but the same number of vertebrates.

74. The report recommends that a practical examination shall be included in the intermediate, and if the same recognition be accorded it as to the theoretical part of the examination, students could save a year of the eight years' course between matriculation and the final M.B. It is of course essential that the Medical Faculty should be satisfied with the standard of the intermediate teaching in these subjects; but it would have a treble check on it. The intermediate classes and examination would be under the control of the Board of Secondary and Intermediate Education, upon which there would be a medical representative; the Medical Faculty itself could refuse to recognise the intermediate examination and insist on candidates entering for the preliminary science examination; and it should retain the science classes at the medical colleges until convinced that the intermediate classes were fully satisfactory for the needs of medical students.

75. As the average age of candidates at matriculation is 18½ and the course after that to the final M.B. is eight years, the saving of a year would be an advantage that should not be lightly set aside.

76. The existing regulation recognising the intermediate classes and theoretical examination for the preliminary science has not been largely used, since none of the affiliated colleges (except the medical) have taught zoology. But that is one of the deficiencies which the reorganisation of the University should remove. The British secondary schools have made but little provision for the teaching of biology; but in an agricultural country such as Bengal it is particularly important to encourage the provision of biological training and the standard required in the preliminary science should be attained by an intelligent student, if the subject be well taught, in the two years' intermediate course.[1] The students

[1] According to the regulations for the preliminary science examination as regards physics, botany and zoology "the whole subject will be treated in an elementary manner." (Calcutta University Regulations, pages 268, 270 and 271.)

would have been prepared for the work by their two years' course in natural science in the high schools. Less intelligent students, as suggested in the report, might be allowed a third year in the intermediate college, and students who decide on a medical career at some late stage in their education should be admitted to the science classes at the intermediate colleges.

77. We therefore consider that the regulation under which students who have passed the examination in intermediate science in physics, chemistry, botany or zoology are exempted from the lectures and theoretical examination in those subjects for the preliminary science examination should be retained; and that it should be made fully effective by its extension to the practical examination which is to be instituted at the intermediate examination, and by the provision of the necessary classes in selected intermediate colleges. As the teaching of these subjects physics, chemistry, and biology is prescribed as 'in an elementary manner' we should regret the inclusion of classes of that standard in a degree college as it would inevitably lower the standards. We consider that teaching in the preliminary science subjects at the standard prescribed should be either in the intermediate colleges or in special classes at the medical colleges.

XI.—Procedure and Finance.

78. The Commission has considered various schemes of procedure,[1] and the following appears to us the most suitable to the existing circumstances. We concur with the report that the University of Dacca should be established immediately, and we hope that it will not be necessary to delay it until the introduction of the bill for the reconstitution of Calcutta University.

79. The reconstitution of the Calcutta University should also be undertaken as early as practicable. The view has been suggested that the Calcutta Act should be passed at once but should not come into operation till some future years; but we consider that the Act should come into force at an early date as the present constitution of the University has become quite unsuited for its combined teaching and affiliating functions.

80. The reforms in Calcutta University should be carried out either (1) by appointing an executive commission which should have

[1] Chapter LII, paras. 53-63.

strictly defined powers and work in concurrence with the Government of Bengal, and which should arrange for such bodies as may be desirable in carrying on the routine work and in introducing the reforms; or (2) by nominating in the Act the principal bodies recommended in Chapter XXXVII and entrusting the work of reform, including the separation of the intermediate classes, to the Executive Council. We consider that the creation of an executive commission working on the same lines as the existing Senate and Syndicate would probably lead to friction and retard progress.

81. If it be possible to appoint the Board of Secondary and Intermediate Education and institute the intermediate colleges simultaneously with the reconstitution of Calcutta University, we strongly recommend this course. But if it be found necessary to delay the intermediate college policy we urge that the reconstitution of Calcutta University should not be postponed on that account. Under these circumstances we agree to the proposed provisional joint committee on which the Director of Public Instruction and the University of Calcutta should be equally represented to conduct the matriculation and intermediate examinations, to recognise the schools and to prescribe the high schools and intermediate curriculum.

82. The financial estimates advanced in Chapter LI are not excessive; but in our opinion the reforms should not be delayed until they can be carried through at that cost. A beginning should be made at an early date on a more moderate scale, and should be gradually expanded.

83. The estimate for Dacca University has been prepared on a reduced scale to satisfy immediate requirements and no expansions in teaching are allowed for. The estimate provides for the average salaries, which may not be attained during the next five years. No substantial reduction on the Dacca estimate is possible.

84. The intermediate colleges could we consider be started on an annual expenditure of 6 lakhs. The details of this estimate are given in the volume of appendices to this report.

85. The staff required for the inspection and administration of the new intermediate colleges should be provided for. The existing staff should be strengthened by the appointment of additional inspectors and assistant inspectors and by adding one or two

assistants to the Director. In addition to the present number, four to six members of the Indian Educational Service and about the same number of the Provincial Service will be required and the cost of the additional staff will be about ½ lakh.

86. For Calcutta University[1] the Government should provide the additional expenditure on administration, which will amount to about 75,000 rupees, including travelling allowances. The Government should also pay the University an amount equal to the profits now realised from the matriculation and intermediate examinations, which amounts to something over 2½ lakhs. We also recommend that two new constituent colleges, the Islamia and the New Arts College referred to in paragraph 59 above, should be started at an early date and their annual cost will be about 2½ lakhs. An additional sum of one lakh should be provided for the improvement of the colleges in Calcutta. This sum should be substantially increased, and new departments added, as money is available. This should be in addition to Rs. 4⅓ lakhs, which the Government is now contributing to the teaching of arts and science in men's colleges.[2] It will raise the Government contribution to the Teaching University of Calcutta from 4½ lakhs to about 10 lakhs.

87. For the general improvement of the mufassal colleges a sum of two lakhs should be immediately provided for contributions to the colleges to aid the improvement of these staffs.

88. For the following expenditure we consider many important reforms could be executed :—

		Lakhs.
1.	Dacca University	6
2.	Intermediate colleges	6
	Increased expenditure on inspection and administration	½
3.	Calcutta University	6¾
4.	Mufassal colleges	2
	TOTAL	21¼

89. Useful progress could be achieved by a beginning on an even more moderate expenditure which should be increased as

[1] The details are given in the volume of appendices to the report.

[2] Grant to University 1,28,000; Presidency College 2,50,000; Sanskrit College, 13,000; St. Xavier's College, 12,000; Scottish Churches College, 24,000; St. Paul's College, 6,000.

larger funds become available. According to some lines by Browning—

The common problem, yours, mine, everyone's
Is not to fancy what were fair in life
Provided it could be—but finding first
What may be, then find how to make it fair
Up to our means.

As we are bound to consider that Bengal may not be able to afford in the near future an additional expenditure of 60 lakhs per annum on higher education, we beg to urge that the reform of Calcutta University should be at once begun and pressed forward up to the means that may now be available.

ZIA-UD-DIN AHMAD.
J. W. GREGORY

CALCUTTA,
The 18th March 1919.

B.—Note by Dr. Zia-ud-Din Ahmad.

1. I beg to submit the following note in addition to the note which I have signed jointly with my colleague, Dr. Gregory.

2. I agree with the general terms of Dr. Gregory's statement upon the standard of the matriculation examination of the Calcutta University. My experience at Aligarh has given me the opportunity of comparing the attainments of students who have matriculated at the various Indian universities; and from what I have seen, I can corroborate his criticisms. But I am of opinion that the recommendations of the main report, when carried into effect, will extend the scope of the examination and improve its quality in such a way as to remove the defects referred to.

3. *Recognition of teachers.*—I am in agreement with the proposals of the report in regard to recognition of teachers, but I apprehend the possibility of two kinds of difficulties in the actual working of the scheme which are mentioned by Dr. Gregory in his note (paragraphs 23 and 24).

(*i*) Colleges which employ a number of European teachers on their staffs might find it difficult to secure men of the right type unless such men were assured beforehand that they would receive full recognition by the University. This difficulty might, however, be surmounted if there were, in London, an authoritative body, such as the universities bureau suggested in Chapter L, and this body were empowered, on behalf of the University, to give definite assurances in regard to recognition.

(*ii*) A second difficulty might arise in the employment by the denominational and other colleges of teachers selected on the ground of their general utility to the students. A college, for instance, may desire to employ teachers belonging to a special community in the interests of the students of that community. I think that the safeguards proposed by the Commission in Chapter XXXVII, Section XIII, ought to enable such a difficulty to be dealt with. But if justified complaints are repeated,

it might be necessary that the system of individual recognition should be abandoned in favour of the recognition of the staff of each department as a whole.

4. *Tutorial system.*—I agree generally with the scheme of tutorial teaching advocated in the report, but I think that there may be some difficulty in securing teachers competent to carry out the system at the outset. Until a sufficient number of such teachers can be secured, the present system of class lectures should be continued; but the number in a single class should in general not exceed 60.

5. *Temporarily affiliated colleges.*—I regret the necessity for instituting two parallel series of examinations in the same university, though this is, in the circumstances, unavoidable. But I should regret still more the introduction of a third series for the temporarily affiliated colleges as suggested in Chapter XXXIV, paragraph 145. I think therefore that the option of the temporarily affiliated colleges should be limited to the examinations of the teaching university and those of the Mufassal Board, and no special examination should be instituted for them.

6. *Higher education of Muslim girls.*—I beg to point out that at the present moment the only college for women maintained by the Government, namely, Bethune College, Calcutta, (owing to its trust-deed) is not open to Muslim girls. This disability has not been felt up to the present. In 1918 not a single Muslim girl passed the matriculation examination of the Calcutta University. But the attachment of intermediate classes to the Eden High School of Dacca, as we have proposed, will provide facilities up to that stage for Muslim girls; and further facilities should be provided for the higher education of Muslim girls as need arises.

7. *The recognition of schools.*—The report in Chapter X has dealt with difficulties arising out of the recognition of schools. I suggest that whether the recognising authority be, as at present, the Syndicate of the University, or whether it be the Board of Secondary and Intermediate Education, in whatever way it may be constituted, the members of the recognising authority who have not actually seen or inspected a school ought not to recognise such a school in opposition to the recommendations of the persons who have actually carried out the inspection. If the recognising authority are not satisfied with the original report received from the inspectors they should have power to carry out such supplementary

enquiry as they think fit. But if the recommendation of the body or person charged with this further enquiry is unfavourable to the recognition of the school in question that recommendation should not be over-ruled.

ZIA-UD-DIN AHMAD.

CALCUTTA,
The 18th March 1919.

C.—Note by Dr. J. W. Gregory.

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I.—Examination standards and the existing representation of teachers.

1. In addition to the note submitted conjointly with Dr. Zia-ud-din Ahmad I desire to refer to some questions on which I do not concur fully with the views of the report or on which some supplementary notes appear to me desirable.

2. The Commission is unanimous that as the university students in Calcutta are so numerous and varied they must be distributed among many colleges, the relations of which to the University involves consideration of the relative qualities of the work of the colleges and of the University. The blame for the defects in university education in Bengal is often thrown mainly on the colleges; and the remedy accordingly suggested is to increase the university share in direct teaching and to strengthen its control over the colleges. It should, however, not be forgotten that the colleges have to work on lines and to standards determined by the University. The first grade colleges have, in my opinion, upon the whole, done their share of the educational work of Bengal better than either the University or the schools. The colleges have been handicapped by the deficiencies in the schools, which are justly described as 'the root of the trouble,' and in the report[1] as 'the capital defect in the higher education of Bengal'.

3. The scholars from the schools are ill-prepared for university work, and the standard of work in the colleges depends on the standard which the University exacts at matriculation which

[1] Chapter VIII, para. 21.

admits to them; and according to a widespread opinion the standard of that examination has become substantially lower in recent years. To demonstrate this conclusion by examination statistics may be difficult, but they show that this belief is not surprising. The percentage of passes in matriculation in Calcutta is much higher than in other Indian universities. In the year 1917 the percentages passed were as follows[1]:—

University.	Per cent.	Quinquennial average 1913-17 according to Mr. Shirras.
Calcutta	70·1	64·1
Punjab	66·4	57·6
Bombay	34·7	38·9
Allahabad[2]	27·0	32·9

The matriculation results do not admit of simple comparison, since the pass percentage at Calcutta is raised by the exclusion from the examination of pupils whom their teachers expect to fail; but the excess of Calcutta over Allahabad or Bombay cannot be explained by this cause.

That the Calcutta standards for matriculation are lower than those for the corresponding examination at other Indian universities is repeatedly asserted.[3] Thus Dr. Wali Mohammad reports[4] from the experience of Aligarh "that the Calcutta first division student is hardly better than the Punjab or Allahabad third division student." The Rev. Garfield Williams told us in his evidence that candidates who fail at Allahabad pass easily at Calcutta; and Mr. Sharp in his answer to Question 8 (ii) states that "the last report of the Director of Public Instruction, United Provinces, indicates that boys who are incapable of passing the test in that province migrate across the border in order to avail themselves of the facilities of the Calcutta matriculation." At the visit of

[1] The Madras percentage, 26·3 per cent., is not comparable as most of the candidates in that Presidency enter for the school leaving certificate.

[2] Statistics of British India, Volume V, Education, 1916-17, page xii and 208. The combined number for the matriculation and the school leaving certificate examination at Allahabad is 34·5 per cent.

[3] In reference to Calcutta matriculation, the report remarks, Chapter XL, para. 14, that the standard 'is undoubtedly too low.'

[4] Question 8.

the Commission to St. Paul's College, its principal, the Rev. W. E. S. Holland, who was the founder of the Oxford and Cambridge House at Allahabad, told us that the standard of matriculation at Calcutta was 1½ years behind that of Allahabad. And in reference to Madras Mr. Holland subsequently wrote,[1] referring to this interview, "I have already furnished the Commission with some facts and figures which indicate that the Calcutta standard is considerably lower than that of Madras."

4. Further general testimony was given by the Director of Public Instruction for Assam, Mr. J. R. Cunningham, who in his answers states[2] "the extraordinary increase in recent years in the number of those who pass from school to University is due in large part to the lowering of the standard of examination which has been the unexpected outcome of the new university regulations and, if the University (*i.e.*, Dacca) which is now to be brought into existence is true to the hopes in which it is being established, one of its first results will be the strengthening of the tests for the intermediate qualifications and the degree."

A second significant fact is the great increase during the last 14 years in the percentage of passes in the Calcutta University examinations, as shown by comparison of the results of 1904-06 with those for 1915-17.[3]

Year.	Matriculation *per cent.* of passes.	Intermediate arts.	B.A. pass.	B.A. honours.
1904	37·8	33·8	10·1	40·5
1905	41·6	31·7	20·5	39·1
1906	26·3	35·8	20·9	49·7
1915	60·1	49·8	44·5	69·3
1916	58·0	45·5	57·8	81·5
1917	70·1	44·6	45·7	78·6

5. This remarkable increase in the proportion of passes was discussed by the Senate in a series of meetings during 1915 and

[1] Question 1. In his answer Mr. Holland remarks "it is hard to resist the conclusion that standards have dropped considerably of late."

[2] Question 4.

[3] Statistics of British India, Volume V, Education, 1916-17, pages 204-208.

at a joint meeting of the Faculties of Arts and Science.[1] At the Senate on 20th February 1915, Dr. E. R. Watson[2] quoted the following figures to illustrate the increased pass rates in the matriculation, intermediate and degree examinations.

Year.	Percentage of candidates who passed the examination.		
	Matriculation and entrance.	F.A. and I.A.	B.A.
Average for—			
1898-1903	47·4	36·2	21·9
1904	37·4	34·3	14·8
1905	41·5	32·3	23·4
1906	26·2	36·2	24·4
1907	57·7	39·5	22·1
1908	61·7	43·5 and 37·3	36·1 and 39·2
1909	63·3 and 60·3	34·1	51·5
1910	78·8	40·7	47·8
1911	70·3	50·0	61·1
1912	64·3	48·6	59·9
1913	73·2	47·9	62·5

To judge the examination standards of different decades is difficult. The proportion of passes is no final test since it should vary with the quality of the teaching; and a rise after 1904 would appear a natural consequence of the reforms that followed the Universities Act of 1904. That Act, however, applied also to the other Indian universities but has not produced the same effect in them. During the discussions on the question in the Senate during 1915 some speakers welcomed the higher pass rates as evidence of better teaching, but this view was rejected by others. Thus, according to Dr. Watson, "to my mind there is only one possible explanation of this very rapid increase in the percentage of passes in the Calcutta University examination, *viz.*, that the examiners have been much more lenient of recent years." This conclusion is supported by the opinion of various witnesses. "The standard of

[1] Minutes of the year 1915: Senate and Faculties, No. 3, 20th February, pages 6-12 in Volume for 19th June—31st December 1915, No. 10, pages 40-50 No. 13, pages 151-166. The subject was also considered in reference to the Committee of Sixteen by the Faculties of Arts and Science; in the Minutes for 19th June—31st December 1915, pages 110-115.

[2] Dr. Watson has been engaged in educational work in Bengal since 1904, and has held the appointment of Professor of Chemistry at Dacca College since 1908.

examination has undoubtedly deteriorated", says the Rev. W. H. G. Holmes.[1] "Any boy placed in the first division ten years ago was far superior to hundreds of boys placed in the first division now." The matriculation standard according to Maulvi Tassaddu Ahmed,[1] an Assistant Inspector of Schools, has been 'lowered unconscionably'; Mr. Karuna Kanta Das Gupta,[2] Head Master of the Gauhati Collegiate School, says it is lower than ten years ago; and Rai Bahadur Rajendra Chandra Sastri[1] who attributes the increased pass rate to 'a distinct fall in the standard.' Other witnesses reject the view that the rise in pass rates is to be explained by better school teaching; thus Mr. H. Sharp[1] writes that "since 1906 .... there has been no improvement in the schools as a whole and yet the conditions of admission have become more easy." Improvement in many schools there has doubtless been; but that there should have been a sudden change in them in 1906-07 which led to the jump in the matriculation passes from 37·4, 41·5 and 26·2 for the years 1904-06 to 57·7, 61·7 and 63·3 for the years 1907-09 appears incredible since the measures proposed for the improvement of the schools in Bengal in consequence of the 1904 Act were only adopted by the Senate in 1908 and not fully put into operation. That there has been no sufficient improvement in the schools as a whole to explain the higher matriculation pass-rate is supported by a considerable body of evidence. The report[3] in fact concludes that the training at the high schools 'is actually deteriorating in quality.' Whether the teaching in the secondary schools is absolutely worse than ten or twenty years ago the report[4] leaves an open question, but it regards them as having at least fallen back relatively.

6. After a series of discussions the Senate on 4th December 1915 referred the question to a committee. It has not yet reported but its prolonged study of the problem indicates that the complaints have been found to require serious consideration. The examination statistics clearly indicate either that the examinations have become more lenient, or that during the past decade there has been a great improvement in the teaching, both in the schools and in the colleges.

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[1] Question 8.
[2] Question 9.
[3] Chapter VIII.
[4] Chapter X, para. 14.

7. *The influence of the weaker institutions on the examination standards.*—It is often asserted that the examination standards are set by the weaker institutions; but comparison of the results at the various schools show that this cannot be so at least as regards matriculation. The weaker schools suffer a heavy or even total failure of their candidates. The first page of the matriculation list in 1918[1] includes 13 schools of which the percentage of candidates passed varies from 12·5 to 100. The full list includes two schools (one with 7 candidates) from which all the candidates failed. The next lowest rate was 6·2 *per cent.* Nine schools[2] passed less than 33 *per cent.* of their candidates during the years 1916-18, and were threatened with the loss of their recognition. No less than 22 schools had a pass rate lower than 20 *per cent.* and as the average percentage of passes was 59·2, it is clear that the standard is not set by the weakest schools.

8. *The representation of teachers on the governing bodies.*—The new constitution proposed for Calcutta would introduce the teachers directly into the Faculties beside other changes which may be thought to render comparison between conditions in the old University and in the new so uncertain as to be of little value. It should however be remembered that the men who would administer the University would be to a large extent the same. It is represented that teachers as such had no place on the governing bodies under the old constitution; but as a matter of fact the teachers have been and were necessarily well represented on both Senate and Syndicate.

9. The members of the Senate in 1917 are classified on the list supplied to the Commission as follows:—

Education	52
Medical profession	17
Engineering	4
Legal	20
Other professions	7
	100

Of the 17 members of the medical profession 9 were members of the staff of the Medical College or schools; of the 4 engineers, 3 were members of the staff of Sibpur College; and of the lawyers 3 were professors at the Law College. So that 71 of the 100 members

[1] Report of the Syndicate for 1918, page 114.

[2] *Ibid.*, page 145.

were professionally engaged in education. In the same list[1] 26 members represented the mufassal, and of these 21 were principals or professors of mufassal colleges (including one at a madrassah) and 2 were school inspectors, so that the collegiate interests in the mufassal were well represented.

10. The Syndicate consists of 17 members of whom two are *ex-officio :* of the remaining 15 the Faculties elect 11 and the Senate 4 and of the elected members at least seven must be heads of, or professors in, affiliated colleges.[2] Teachers have therefore been well represented on the Syndicate.

11. The inclusion of a considerable representation of teachers in the university councils therefore may not ensure any great change in the administration. The proportion of teachers will indeed be less than it is now in the body which will control finance and make appointments, and will therefore have the power to determine the general educational policy of the University. It is suggested that the colleges would be so largely represented on the two university councils that they could protect their own interests should these appear to conflict with those of the general university organisation. But on the Executive Council of 17 members the college representatives would be one head of a mufassal college, and two heads of Calcutta colleges, of whom one might be head of a college belonging to the University, and one head of a constituent college. The colleges might also be represented by the three university teachers, and by the member appointed by the Board for Women's Education. Hence the constituent colleges might be represented by only one member or by possibly as many as six ; but their representatives would at the utmost be only a small minority.

On the Academic Council out of about 100 members the constituent colleges would each be represented by its principal (possibly 10 in number) and they would share in the 30-50 appointed teachers (half of whom would be selected by the Faculties and half by the Chancellor on the report of the Executive Council). The greater representation in this category is assigned to the professors ; and if the university professoriate is enlarged to the extent suggested the number of college teachers on the Academic Council would probably be small.

[1] The Senate then included representatives of Bihar and Orissa ; but it is convenient to use the classified list for that year prepared for the Commission.

[2] Indian Universities Act, 15(2).

II.—The relations of the University and colleges.

12. The Commission are unanimous that Calcutta University must be organised as a multi-collegiate university with the Calcutta colleges, at least for the present, divided into two groups, one forming a teaching division of the University and the other forming an affiliated group. The success of this multi-collegiate university in Calcutta would depend on the establishment of such relations between the University and the colleges as will secure the whole-hearted co-operation of the colleges and the continued support of the agencies to which they owe their existence.

13. The University should determine the curricula for all degrees, should conduct the degree examinations and should thus guide and standardise the college teaching. But the colleges should be assured of freedom in the arrangement of their work; they should be left with the responsibility for the appointment and selection of their own teachers, though the University should confer university titles and select the teachers who are to undertake inter-collegiate teaching in the name of the University; and the colleges should be given full opportunity of sharing in teaching for honours and for post-graduate degrees.

To facilitate the working of such a multi-collegiate university the relations of the colleges to the University should be as simple as possible and the colleges as independent as is consistent with security for their efficiency. The plan proposed in the report is based on a complex synthesis between University and colleges that may prove troublesome in work, may unduly restrict the college share in the control of the teaching, and would depend on a system of inter-collegiate and tutorial teaching, the success of which in Calcutta is problematical. Under this system the university management of the teaching might develope into that of a mechanical centralised lecture organisation.

14. *The complication and centralisation of the synthesis.*—The scheme is based on the classification of the college teachers into four grades:—

(*i*) University teachers, who[1] should "in general be prepared to take part in the work of the colleges; there may well be occasional exceptions to this;" and as according to

[1] According to Chapter XXXIV, para. 93.

Chapter XXXIV[1] the number of teachers " paid wholly by the University should be relatively small except in subjects in which teaching is not provided by the colleges " the number of teachers thus available for addition to the college itself would be few.

(*ii*) College teachers who have been ' appointed ' by the University as university professors, readers or lecturers, and who as such deliver inter-collegiate university lectures.

This work would be supplementary to their college teaching and they would receive additional pay from the University from a fund raised by contributions from the colleges. These appointed college teachers are to do all the post-graduate and possibly all the honours teaching given in connexion with each college.

(*iii*) *College teachers who have been ' recognised ' by the University as qualified for a particular grade of appointment.*—They would receive no pay from the University, but would be eligible to act as examiners and serve on University Boards, Faculties and Councils. The Academic Council out of about 100 members might include five recognised teachers.[2]

(*iv*) *College teachers who have not been recognised by the University.*—A constituent college might have on its staff up to 25 *per cent.* of unrecognised teachers. Lectures by these teachers would not count towards the attendances required for the degree ; these teachers would not be eligible as examiners or as members of any University Faculties, Boards or Councils. They would have the position of teachers in an affiliated college, while their colleagues would have the privileges of members of a constituent college.

The report[3] remarks that the invidious distinctions between the Indian and Provincial Educational Services makes " friendly co-operation between colleagues in the two services often very difficult ; and in a college of all places, friendly co-operation is indispensable." The distinctions between the four proposed kinds of

[1] Para 107.

[2] Chapter XXXVII, para. 51(*e*).

[3] Chapter XIII, para. 25.

college teachers might be still more invidious and harassing and detrimental to the harmony of a college staff.

15. The system of appointments would be elaborate and possibly dilatory. To fill a vacancy a college would appoint a man to its staff. But he would not be an effective member (and could not indeed be appointed by a college which had already 25 *per cent.* of unrecognised teachers on its staff) until he had been 'appointed' or recognised by the University. It would refer each application to a selection committee[1] whose opinion would be submitted for report to the Academic Council, which would refer the application for decision to the Executive Council. This procedure might prove lengthy and burden the Executive Council with the responsibility for the quality of each appointment to the extent of at least 75 *per cent.* of the college staffs. Provisional recognition might be given; but that would add another stage to the process and would be useless in the case of men holding posts which they would not resign except for a definite appointment.

16. The synthesis would limit the independence of the colleges in the management of their staffs and internal working. The elaborate process required for 'appointment' or 'recognition' has to be gone through at each promotion of a college teacher. The University could thus control promotion. Each teacher is to be recognised for a particular grade. If his college wishes to promote him, he must be resubmitted for recognition, and if the University refused and the college had its full quota of unrecognised teachers the promotion of a man into a grade for which he was not recognised would render the college liable to loss of its status as a constituent college.

17. Over an 'appointed' teacher a college would apparently not have complete control. The employment of a college teacher outside his college would be by arrangement and the University could not attach any of its staff to a college unless the college were willing. But the position of a college which declined to agree to the proposals of the University would be precarious. Every constituent college "must fulfil the conditions laid down by the University regarding....participation in the co-operative teaching work

[1] Chapter XXXIV, para. 118.

of the University".[1] The colleges "would, of course, have to provide their share of the total lecturing staff giving instruction to the whole University."[2] So if the University desired the help of some particular college teacher, refusal by the college would be a breach of the conditions under which it ranks as a constituent college. The fate of a college professorship or readership even though maintained entirely out of the college funds, if the college did not accept the nominee of the University Selection Committee, is quite definite. According to Chapter XXXIV, paragraph 116, "the appointment would, of course, not be made and the post would lapse or be suspended." Thus if a college maintains a chair in a subject in which it specialises and does not accept the university nomination to the post, its professorship would lapse or be suspended.

18. The liberty of a college in regard to 'appointed' teachers would also be limited financially. It is proposed that each constituent college should pay the University "a small monthly fee—say one or two rupees—for every student on its rolls".[3] This fund would be used for payments by the University to 'appointed' college teachers, so a college would receive back its contribution to the extent to which it accepted teachers whom the University 'appointed' to it. As the constituent colleges must under the new conditions receive State aid, this tax may simply prove vexatious, as the amount would have to be made up to them in some other way.

19. As the appointed teachers at a college are to be paid partly by it and partly by the University and would have to work for both, the settlement of the respective contributions to their salaries and claims on their time would present frequent opportunities for friction between the colleges and University.

20. This synthesis and dual control over 'appointed' members of a college staff would also lead to interference in the internal administration of the college. For, as a constituent college is required to participate in the co-operative teaching work of the University,[1] the University could claim the help of members of the college staff and call on a college to place its rooms at the

[1] Chapter XXXVII, para. 73 (*a*) (ii) (*f*).
[2] Chapter XXXIV, para. 52.
[3] *Ibid.*, para. 95.

disposal of a scheme of co-operative teaching; as the University would decide when they were wanted, it could interfere with the internal working of the college. It should be the duty of the University so to organise public lecture-instruction as to make all the best lectures available for all the ablest students.[1] And the discharge of that duty requires the power to revise college time tables, without which it could not be performed. The report recommends that the University should not allow its arrangements to interfere with any daily assemblage of college students, which might be held for moral instruction or religious observance.

21. *The individual recognition of teachers.*—The risk of difficulties between the University and the colleges in regard to their staffs would be greatly reduced if the University were not required to recognise the teachers individually. I agree that every college teacher who takes part in the University inter-collegiate lecturing should be individually approved and appointed to such work by the University; but the individual recognition of teachers whose work is confined to their own college may involve greater drawbacks than advantages.

22. The colleges must be of great variety in type; they would include specialised professional colleges, mission colleges supported by various denominations and with special methods of recruitment, Islamic and Hindu colleges, and general colleges which should specialise more and more in various departments of arts and science. A college worthy of the privileges of a constituent college should be trusted to select the best teachers available for its work, especially as its teaching would be tested by the degree examinations which would be in the hands of the University. Amongst other duties which require special and individual gifts and which must be left mainly to the colleges is the supervision of students' residence. Much of this work should be done by the teachers, and for it men with limited academic qualifications might be especially useful. Their personal fitness for this work could be better judged by the college than by the University. It is true that one quarter of the teachers need not be recognised, and special appointments could be filled from this unrecognised quarter. But as these teachers would be ineligible for membership of the boards of studies and as

[1] Chapter XXXIV, para. 50.

examiners, they would occupy an inferior status which would reduce their authority as general superintendents.

23. Muslim teachers and mission colleges may be especially hampered by the proposed system of recognition. A college with a number of Muslim students may obtain valuable help in their management from a Muslim teacher although his formal qualifications may be inferior to those expected in his grade. The number of available Muslim teachers is small and according to existing arrangements the Islamic subjects are taught by maulvis for whom the scale of pay is below the average; and the rules for recognition might make it difficult to secure the necessary Muslim teachers and their non-recognition might easily arouse inter-racial feelings.

24. The necessity for the individual recognition of teachers might embarrass those private colleges which partly recruit their staffs from Europe; for a European teacher would be less inclined to come to India if uncertain of recognition, for without it he would not be a university lecturer, his lectures would not be on the list at which attendance could be a compulsory part of the degree course, he would have no voice in determining the curriculum, no share in the examinations, and would not be eligible for membership of any university boards, although his 'recognised' colleagues would enjoy these privileges. The field of selection for the staff of mission colleges is restricted as the European members are enlisted from their own denomination, and as remarked in the report[1] "the missionary teacher may not always be a man of the highest academic qualifications." Especially in mission colleges personal devotion may more than compensate for technical qualifications. While the proposed rules of recognition might harass the better colleges it appears very doubtful whether it would help the University to secure the efficiency of the college staffs. The recognition might in most cases become formal.

25. The teachers to be considered would number several hundreds, and each application for recognition would be considered by a university selection committee, then be reported on by the Academic Council, and finally decided by the Executive Council. This elaborate process, which is to be required even for junior assistants

[1] Chapter XIII, para. 29.

and demonstrators[1] would make the University partly responsible for each appointment. The report remarks that academic qualifications alone are an unsatisfactory criterion of the capacity of a teacher. It however recommends that particular academic qualifications should secure recognition to particular grades; so that the decision would tend to be mechanical and formal, and would emphasise the already undue importance attached in Bengal to university degrees.

26. The system might weaken the university control over the colleges. According to the existing conditions of affiliation a college has to satisfy the Syndicate[2] "that the character and qualifications of the teaching staff and the conditions governing their appointment and tenure of office, are such as to make due provision for the courses of instruction to be undertaken by the college." The college must secure a combination of teachers which the University will accept as efficient; but the selection of individual teachers is left to the college provided the combination is competent for its work. The University has the power to refuse to sanction salaries which it regards as inadequate.

27. The difficulties in the enforcement of the University's decisions regarding the staff of a college are similar, whether the recognition of the staff be general or individual, since the punishment by which the University could insist on obedience—apart from recommendation to Government to stop any grants the colleges may receive—is the exclusion of the students from the degree examinations. And this punishment the report considers too clumsy and drastic to be applied. The proceeding in the case of an affiliated college is to recommend the Government to disaffiliate the college either in one subject or altogether. Similarly if a constituent college tried to continue its work with more than one quarter of its teachers unrecognised, the University would have to submit a statute to the Court and to the Government to deprive the college of its privileges as a constituent college. The punishment would be as cumbrous and more drastic than the disaffiliation of a single subject.[3]

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[1] Chapter XXXIV, para. 110.

[2] Regulations of the Calcutta University, Chapter XVIII, para. 6(*b*).

[3] It is stated in Chapter XXXIV, paragraph 10 that this control is wholly ineffective. I do not concur with the idea that it need be ineffective.

28. The advantages that might be gained by the individual recognition of teachers do not seem to me commensurate with the risks of inelasticity in appointment and promotion, the lessening of college responsibility, the difficulties to Musalmans and mission colleges, and the invidious distinctions it would raise between teachers who might be otherwise of equal value to their college. The right of the University to approve and appoint all teachers to the staff of its inter-collegiate lectures and the maintenance of the existing powers of control over each college staff as a whole, would seem to me adequate and less likely to lead to friction.

29. *Self-contained colleges and inter-collegiate lectures.*—The two main advantages claimed for the proposed synthesis are that it would promote inter-collegiate lecturing and tutorial teaching. The former question is considered in the joint note[1] with Dr. Ziaud-din Ahmad which deals with some of its difficulties. We there remark that under the existing conditions in Calcutta it is advisable that each college should provide classes in all the chief subjects in each pass degree course for which it teaches. To that extent each college should be self-contained, but specialisation should be encouraged by colleges specialising for different degrees. Considerable variation on these lines has already developed among the Calcutta colleges. Thus in the degree courses (*i.e.*, post-intermediate) St. Paul's College teaches no science and St. Xavier's College no arts. The Scottish Churches College specialises in philosophy and until recently was the only Calcutta college teaching to M.A. in pure mathematics. Presidency College has M.A. or M.Sc. classes in English, mixed mathematics, political economy, philosophy and several science subjects. The Sanskrit College which specialises in oriental studies is affiliated in five arts subjects, but for honours only in Sanskrit. The Bangabasi College is the only general men's college, except Presidency College, which has a B.A. course in botany. Persian is provided for the B.A. only in the City, Ripon and Presidency Colleges. The Vidyasagar College is mainly occupied in coaching failed students through the degree examinations. The Indian Association for the Cultivation of Science teaches botany of the intermediate stage to about 600 students from colleges which do not provide it, including the Central, City, Ripon, St.

[1] Section VIII.

Paul's, St. Xavier's, Sanskrit, Scottish Churches, and Vidyasagar, and also students from the Bangabasi and Presidency Colleges.

30. The general restriction of each student each session to a single college appears an inevitable consequence of the charge of a composition fee which admits to all the classes in the course. If a college does not teach a subject which a student wishes to take, he generally takes a full session at some college which provides it. For this reason it is, says Mr. M. P. West,[1] "a common experience to find men whose university career has been divided between four different colleges."

31. According to the arrangements proposed for the inter-collegiate lectures, the students would decide, though after advice from their tutors, at which college they would attend. They may be expected to crowd to a teacher whose lectures according to popular reputation are successful in preparation for examinations, whereas a lecturer who exacts more independent work may be neglected. The rush from college to college may not be conducive to discipline and steady work. A slack college may not discourage the exodus of its students to lectures elsewhere; it has paid its one or two rupees per student per month to the University[2] and may feel entitled to the full benefits for this contribution. It may appoint its quarter of unrecognised teachers, restrict its courses to a few subjects so that it has to pay but few salaries at the rates of heads of a department; it may maintain as many classes as are necessary to attract the full number of students it is entitled to admit; and it may encourage its students to make use of their privileges of attendance without extra fee at other colleges. And if the students learn much of their work outside the college the examination results will no longer detect inefficient teaching; for the negligence of one teacher would be concealed by the teaching in another college. The college classes would be tested only at the triennial inspection and the slackness of individual teachers might then easily escape detection.

32. A college principal would have a limited control over an indolent teacher, who would have the security of a three years' tenure and could not be dismissed for slackness or for his modesty

[1] Question 6.

[2] Chapter XXXIV.

in advising his pupils to attend the lectures of the more distinguished scholar in some neighbouring college.

Colleges who were anxious to economise, indolent teachers and students who found college discipline irksome would welcome the inter-collegiate system.

33. *Tutorial teaching.*—Tutorial teaching has hitherto played a subordinate part, especially in arts, in the colleges affiliated to Calcutta University, and it has not been very successful and, unless extended cautiously, may lead to inferior results. The difficulties include the following:—

(*i*) A tutor is apt to lecture to his class and tutorial teaching may consist of inferior lectures.

(*ii*) A teacher may feel less responsibility for a small class and give less time to preparation for it.

(*iii*) Tutorial teaching is apt to become coaching for examinations, and with the habit in Bengal of subordinating teaching to examinations it is liable to lead to the extension of cramming.

(*iv*) One serious defect in the college teaching is that the intermediate classes have been forced to teach to some extent on school instead of college lines. The use of school methods for the intermediate classes is asserted in various answers to the Commission's questions. Thus the Rev. W. E. S. Holland[1] advances as the second evil due to the stage at which students are admitted to the University "the domination of the University by school methods. For at least two years our students are incapable of instruction except along school methods. Up to the I.A. it is all really school work. The teacher teaches the entire subject to his class .... And the mischief of having this school work done in a university college is that the school methods necessary in the first two years dominate the whole University right up to the end of the M.A. course." "By the exclusion of intermediate students from our university colleges," Mr. Holland adds in a later answer,[2] "school methods will be left behind." According to Mr. Raj Mohan Sen,

[1] Question 1.

[2] Question 5 (iv).

Professor of Mathematics at Rajshahi,[1] the colleges are "mere bigger schools" which teach higher subjects "but the method of teaching followed is the same as in schools." The students, he says, are "to a large extent passive recipients of instruction, instead of being active workers under the advice and guidance of the teachers." According to Mr. M. P. West[2] "the students of the intermediate class are still school boys .... nor old enough for college methods of teaching."

The practices which support these opinions are the extensive dictation of notes to be learnt by memory, the use of 'cram books and keys' instead of advanced text-books and original authorities, and 'spoon-feeding' the students with predigested information instead of teaching them to learn by independent study. Some of the colleges teach their smaller intermediate classes by methods used in upper secondary schools in Britain. Tutorial teaching, unless duly subordinated to lectures, would, in the conditions of Bengal, probably extend the use of such methods in the degree classes, and depress their quality below that appropriate to a university.

(*v*) The tutorial system requires a higher proportion of teachers to students; and a larger number of rooms; and though, as remarked in Chapter XXXIX, paragraph 50 of the report, a few additional rooms could be provided without serious difficulty "the majority of the present college buildings in Bengal do not readily lend themselves to reconstruction on the lines which we recommend."

(*vi*) Unless due provision of tutorial rooms be made, says the report,[3] "any attempt to reduce the number of compulsory lectures—a reform which appears to us essential—must result in idling and ineffective work." This risk is serious in tutorial teaching by teachers who are not well trained for it and do not insist on punctuality and persistent work. The number of university lectures at which attendance would be compulsory might

[1] Question 1.
[2] Question 8.
[3] Chapter XXXIX, para. 49.

be only five a week; the rest of a student's time might be devoted to college lectures and classes and to tutorial and private study during which an unpunctual or unsystematic student may waste much time. The maintenance of regular attendance and of discipline at classes scattered through various colleges may be expected to prove more difficult than when, as at present, a student takes all or nearly all his classes at a single college. The training of an adequate number of competent tutors will take a generation or more; and while some existing conditions persist predominant tutorial teaching may have less satisfactory results than the predominant use of lectures.

34. The personal contact of teacher and student is of course one of the most valuable of educational influences and as it should be most easily developed under mufassal conditions it seems to me desirable that all the best smaller first-grade mufassal colleges should be continued. For instance, the colleges at Krishnagar and Hooghly are both comparatively small and the staffs are able to give much personal attendance to the students, with results indicated by, amongst other things, the examination lists. Thus in the B. Sc. examination[1] for 1918 the Hooghly College (with 12 candidates) passed 100 *per cent.*, the average pass rate for all the colleges being 63·3 *per cent.*; in intermediate science Hooghly College with 28 candidates passed 67·8 *per cent.*, being only a little above the average of 63·9, so that its excellence in its science teaching is more marked in the degree than at the intermediate stages. Krishnagar College, which is stronger on its arts side, in the same year for B.A. passed 61·5 *per cent.* of its 13 candidates against an average for all the colleges of 50·5 *per cent.* (it being the ninth college in place out of 30); out of 45 candidates for intermediate arts 76·1 *per cent.* passed against an average of 55·7 *per cent.* (the college being the fourth out of 40). These colleges with some increase in the number of degree students which would result from a somewhat wider curriculum, and with their advantages of picturesque buildings and situation, open country and fairly easy access to the libraries and other institutions in Calcutta, appear particularly propitious for the development of a vigorous collegiate life.

[1] Report of the Syndicate for the year 1918, pp. 160, 160, 168, 153.

35. *The affiliated colleges in Calcutta.*—I agree with the report that in addition to the two kinds of colleges admitted to the Teaching University it will be necessary for the present to maintain in Calcutta a third group of colleges which would be affiliated to the University; but owing to the special usefulness of affiliation under the educational conditions of Bengal these colleges must be allowed to remain affiliated longer than can be at present determined and not merely for 'a brief period' as recommended in Chapter XXXVII, paragraph 74. That these colleges cannot be conveniently included as constituent colleges is due in the case of some of them to their distance from the university quarter; in the case of others owing to the numbers of their students being in excess of their accommodation and equipment and to their general subordination of teaching to examination. In fairness to these colleges it should be remembered that the responsibility for these latter defects rests largely with the University, which could have remedied them by enforcing its powers under the terms of affiliation and by improvement in its examination methods. It should also be borne in mind that a large proportion of the students at these colleges have failed to pass the examination in previous years, some of whom have been refused readmission at other colleges. Thus in 1917-18 the numbers of students in these colleges who had previously failed were at the City College 382, Bangabasi 394, Ripon 413, and Vidyasagar 669. In the same year the corresponding numbers at the Presidency, Scottish Churches and St. Paul's Colleges were respectively 64, 99 and 11.

36. That these four colleges should retain some connexion with the University appears indispensable, especially from their provision of science teaching. In the session 1917-18 the four colleges in question had 1,506 science students of whom 267 were taking the B.Sc. course. In the same session Presidency College had 482 science students of whom 304 were taking B.Sc. or M.Sc.; the Scottish Churches College had 344 science students of whom 128 were taking B.Sc.; and St. Xavier's College had 415 science students of whom 120 were taking B.Sc. Science teaching in Calcutta for the bachelor's degree is practically dependent on these seven colleges and as one of the most pressing educational needs of Bengal is the extension of science teaching the contribution of the four colleges cannot be spared unless they be superseded by others with large and well-provided scientific departments. It would

doubtless be more economical to improve the existing colleges than to replace them.

37. It may be suggested that their contributions to science teaching for the degree could be dispensed with if the intermediate science students were removed from the Presidency, Scottish Churches, and St. Xavier's Colleges, so as to provide in them more accommodation for degree classes. This measure would however be inadequate. Presidency College in 1917-18 had only 178 intermediate out of its 482 science students, and the accommodation left by their removal would be required for the necessary extension of their B.Sc. and M.Sc. classes. The Scottish Churches and St. Xavier's Colleges may not be able to provide thus much accommodation for science students from other colleges, as they might continue their intermediate science classes in their existing buildings and might not be able to arrange for large new laboratories for their degree classes.

38. It may be said that colleges which are not worthy of inclusion in the teaching division of the University should be excluded from the University altogether and either closed down or continued as intermediate colleges. This simple policy appears impracticable. These colleges are the result of private effort which must be encouraged if education in India is to be adequately developed; they were apparently all founded from genuine educational enthusiasm and the impulses which led to their foundation could be used for their improvement. Even the suspicion that privately established educational institutions were being treated unjustly would tend to discourage private initiative in education. Judicious encouragement and help, on the other hand, may improve these colleges and prepare them for ultimate entrance to the teaching division of the University.

39. The improvement on these colleges could be effected by the more vigorous application of the existing rules of affiliation, by the help of Government grants in compensation for the loss of income and increased expenditure consequent on the separation of the intermediate classes, and by the raising of the examination standards. The degree examination is a strong weapon, in the use of which the Indian universities are fully autonomous; and by the maintenance of adequate standards the University can compel the less efficient colleges to employ more teachers, obtain better equipment, libraries and laboratories, provide more accommoda-

tion for independent work at the colleges and help backward students with more tutorial teaching.

40. The recommendation in Chapter XXXIV, paragraph 145, that the authorities of these colleges should have the option of presenting their candidates for the examination of the Mufassal Board seems to me most important in order to avoid the necessity of having three different sets of examinations in the same subjects for the same degree. The Calcutta affiliated colleges would accordingly have the option of working on the same curricula as those prescribed for the mufassal colleges under the Mufassal Board.

41. The women's colleges present a difficult problem owing to the necessity of allowing them to retain their intermediate and degree classes in the same institution. Otherwise, as the three women's colleges in Calcutta had between them in 1917-18 only 54 B. A. students and no student in B. Sc. the degree classes could hardly be maintained. Moreover as the Diocesan and Bethune Colleges are four miles apart any considerable inter-collegiate co-operation between them is impracticable. The simplest course with these colleges would be to leave them for the present as affiliated colleges ; but the decision should be left to the Executive Council and the proposed Board of Women's Education.

III.—Science in the high school examination.

42. The adoption of the proposal that there should be no examination in the introductory course in science that is to be included in the high school curriculum would, according to much emphatic testimony, prevent that course contributing much to scientific education in Bengal. The urgent need for more science in education is widely recognised. Thus the proposal that science should be compulsory at matriculation was more strongly supported in the answers to Questions 8 and 13 than either history or geography. The numbers in favour of history were 88, of geography 115 and of science 141. We have received authoritative warning that at present in Bengal no examination in a subject means no work in it. The Commission's Question IX. ii. *c.* asked whether it would be desirable in some subjects or section of a subject not to test the teaching by examination. The overwhelming balance of opinion is against the suggestion. "The colleges are not yet ready for it," declares Sister Mary Victoria. "Without some kind of examination," says Mr. Wordsworth

the Officiating Director of Public Instruction, Bengal, "there would be no incentive to work: as matters are in Bengal, subjects not examined in are neglected by both teachers and students; nor is there likely to be any early change in this respect." Mr. J. W. Gunn, the Assistant Director of Public Instruction, says, "it would merely extend the evil already prevalent in the schools, namely; the general neglect of all non-examination subjects." Miss Eleanor McDougal remarks, "I fear that the students would designedly pay no attention to these subjects [*i.e.*, those without examination] and teachers would be tempted to neglect them." Mr. Barrow reports, "I believe (and I am supported by the staff of Presidency College) that hardly anyone would take up any course if he had not the prospect of passing an examination at the end of it." Some of our correspondents, such as Mr. H. B. Dunnicliff and Mr. Südmersen, would favour the suggestion for the degrees of M. A. and M. Sc.; but even for those grades it is stipulated there should be 'very careful safeguards.' Amongst our Indian correspondents reference may be made to the answers of Mr. Kalipada Sarkar, who meets the proposal with an emphatic 'no'; of Mr. Benoy Kumar Sen, who says "that without the pressure of an examination the students cannot be made to pay sufficient attention to the subject—hence, all labour will be simply wasted;" and of Mr. Raj Mohan Sen who does "not think that our students, as they now are, will seriously study any subject in which they are not to be examined." The answers supply, both from college and school experience, an impressive warning that if science be excluded from the examination its inclusion in the school course will be ineffective. The public demand for more science in secondary education will be nominally granted but in a manner that will be practically inoperative.

43. The fate of science if excluded from the examination subjects may be foreseen from the effects of a similar experiment on geography under the regulations of 1906. Geography and history were then made optional subjects at matriculation. Dr. Brajendranath Seal remarks[1] "simplification, the relief of congestion and undue strain, was our aim. The result has been disastrous." The experiment with geography has been indeed disastrous. The subject was taken in 1916 by only 2,382 (out of 14,058) candidates, in 1917 by 2,602 (out of 15,876), and in 1918 by

[1] Question 9.

2,444 candidates. In history the result was less unfortunate; the candidates in it for the same three years were 8,546, 8,744 and 7,122. Geography is the more neglected as the equipment required is more expensive[1] and being partly a science subject it appeals less to the literary bias of the Bengali. Science appears to be the least appropriate subject for this policy. It is agreed that Indian education is too bookish and literary, and that the teaching of science is necessary to counteract this tendency. For the reasons stated in Chapter XXXI, paragraph 59, science is of especial educational value in Bengal, and the reasons advanced for placing it in a different treatment as regards examination appear quite unconvincing.

44. This question has recently been carefully considered in England. The proposal that science should be taught in the course for the first school examination, but not included in the examination, was urged upon the Committee on "the Position of Natural Science in the Education System of Great Britain" of which Sir J. J. Thomson was Chairman. The proposal was unanimously and emphatically rejected. As shown by the extract quoted in Chapter XXXI, paragraph 64, the Committee were unanimous that it is 'essential' that every boy should be required to pass the examination in science, that otherwise the subject would be neglected owing to its cost and difficulty, and that the certificate signed by the schoolmaster would be an inadequate test. The British Science Committee would prefer in such an examination to include in all subjects the class work and the co-operation of the teachers; but they insist that there is no reason why science should be treated "in a different way from all other school subjects in respect to examination."

45. The conclusion adopted by the British Science in Education Committee seems to me even more necessary in Bengal than in England. I therefore consider that at the high school examination each candidate should present six subjects[2] and that there should be five compulsory subjects, *viz*: English, vernacular, elementary mathematics, geography and an introduction to natural science

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[1] The report remarks, Chapter XXXI, footnote to para. 63, that the teaching of geography has been "retarded by the somewhat exacting requirements as to equipment." That in science would probably be more costly than in geography.

[2] *Cf.* Chapter XXXI, para. 70.

(which should include some hygiene); and that the sixth subject should be selected from a list including a classical language, history, additional mathematics and an approved scientific subject.

46. It may be urged that six compulsory subjects are too many but this argument would be weightier in regard to teaching than to examination. If the teaching course be too heavy the exclusion of science from the examination would be taken as an invitation by many school authorities to neglect it.

47. Another argument that may be urged against a compulsory examination in science is that the subject would at first be badly taught; but for that reason the examination would be especially helpful in the early years of the new course. When the subject is new, the teachers inexperienced, and the school authorities are disposed to postpone its introduction and avoid its expense, an expert examiner would be especially useful in guiding the teaching as well as in testing it. The certificate of a head master or head mistress would not be reliable evidence of either the extent or efficiency of the teaching. Unless the examination in natural science be compulsory there are serious reasons to fear that the course will be generally neglected and that the important educational benefits expected from it will not be realised. Hence I recommend that, after an interval of five years to allow for the provision of the necessary teachers and equipment, the introduction to natural science should be compulsory both in the high school course and in the high school examination.

CALCUTTA,
The 18th March 1919.

J. W. GREGORY.

CALCUTTA
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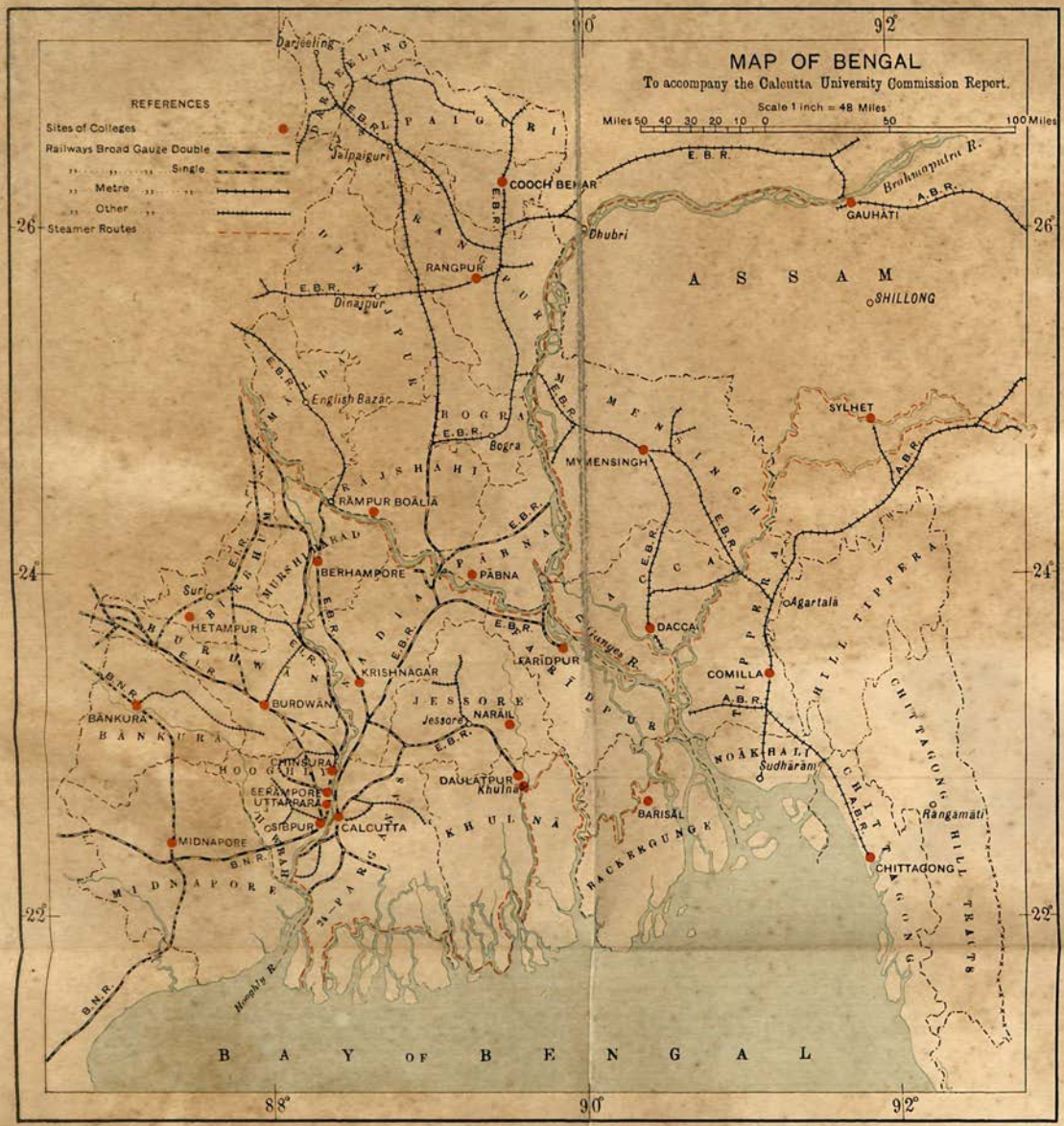

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